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Gas Journal

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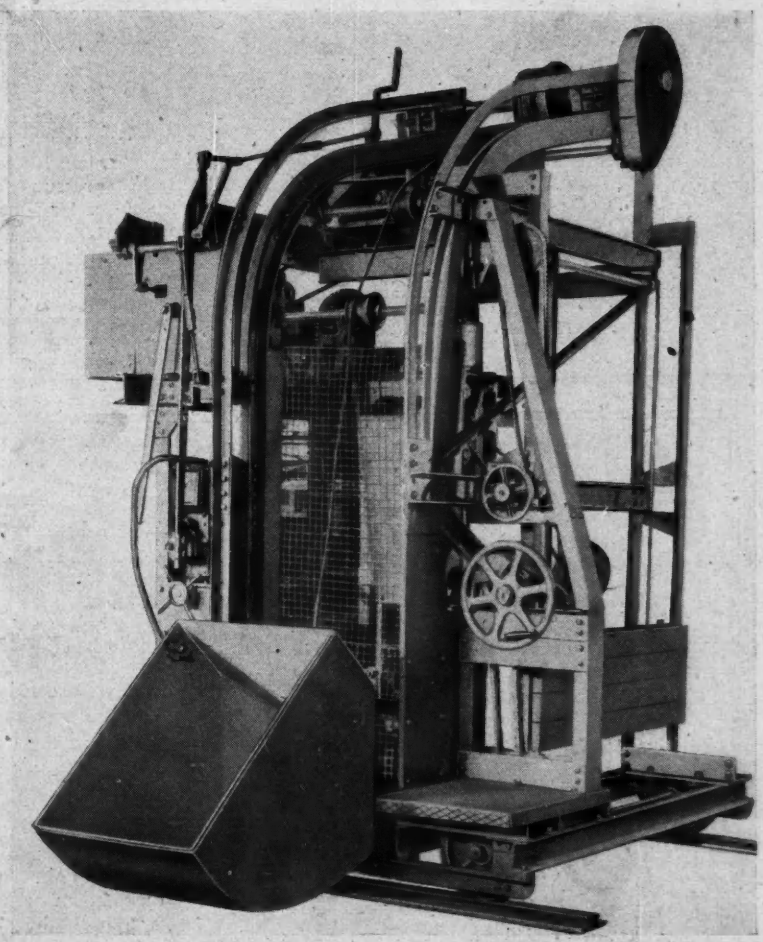

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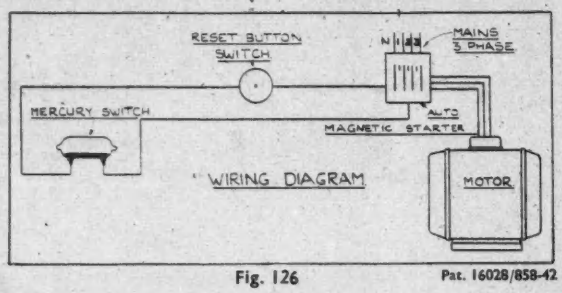

Fig. 126 Pat. 16028/858-42

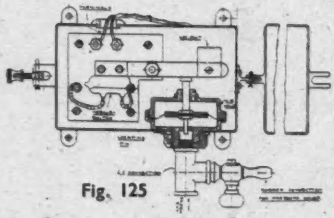

Fig. 125

Peebles

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for use with Boosted Gas equipment: as Gas Furnaces

This is of especial interest to Gas Managers faced with a shortage of fully experienced attendants. What it does is to relieve the staff of the duty of attending to motor compressors.

No. 1 will start a compressor when pressure falls to a fixed level and stop it when pressure has been built up to the normal figure.
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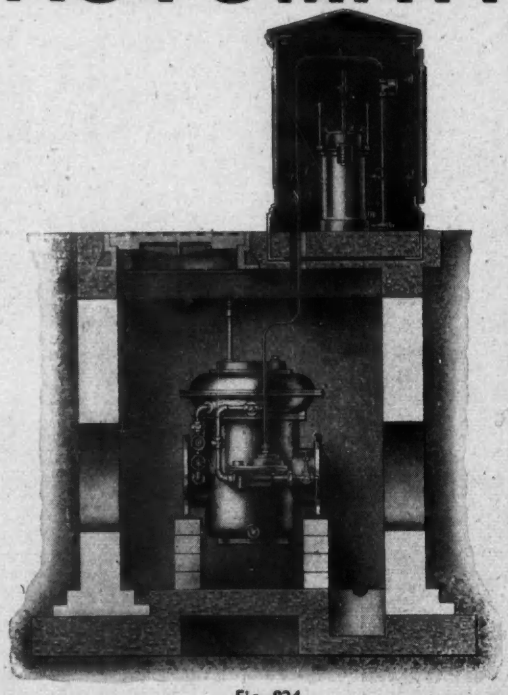

Fig. 824

DONKIN AIR LOADING DEVICE

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The illustration shows a 12" size Diaphragm Pressure Regulator in an underground pit. The controlling mechanism is housed in an Iron Kiosk.

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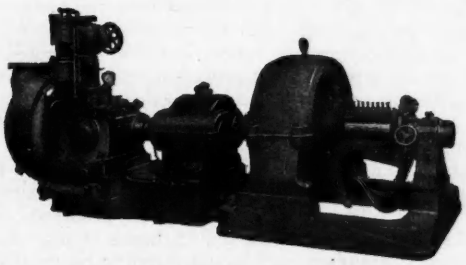

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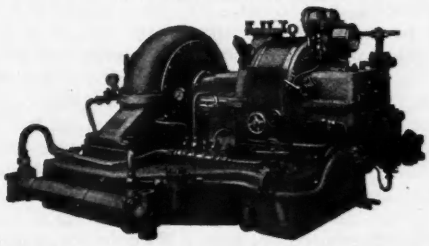

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GAS JOURNAL, JUNE 23, 1943

VOL. 241 95th YEAR No. 4179

EDITORIAL NOTES

EFFICIENCY

"TOWARDS Efficiency" seems to us to crystallize in a phrase the business part of the Institution meeting on June 9, though we did query last week whether the Gas Industry, sufficiently pleased with its performance and its potentialities, had decided to revel in discussion for discussion's sake, to hold a forum for a day, and then for a year, maybe, go back to routine quite happily. We hope we are wrong, but our thought was not a fleeting one, and we were glad that Mr. Dixon should sting with a little acid the concluding sentences of his contribution to this year's "symposium." He spoke of the recommendations of panels dealing with manufacturing and distribution practice; he recalled the comments of Dr. E. W. Smith a couple of years ago, who, outlining the problems before the Industry at the time (they are the problems of to-day), asked quite simply, "What are we going to do about it?" Two valuable years have passed, and we sympathize with Mr. Dixon when he expresses some bewilderment about the Industry's "Standard of Determination." Of course, the Industry has had its troubles since September of 1939, and its services—vital services—are not forgotten. Yet it seemed to us, as the editorial columns of the "JOURNAL" testify, that the executives of many undertakings had positively to be shaken to make it sink in that benzole should be recovered from gas in the all too obvious national interest. In 1940 gas engineers and managers, particularly in the Provinces, were arguing on lines of "Will it Pay?" In 1941, and again the "JOURNAL" testifies to this, they were arguing on the same lines, and it appeared to us to be an indulgence in discussion for discussion's sake. During the war, panels, as Mr. Dixon said, have reported. His words were: "The implementation of the reports [I.G.E. reports] and the attainment of the standards already set are urgent and are matters for every individual." This is true enough, and we can only hope that a further set of committees will not be appointed to report on the findings of the committees which in the heat of war have sat and have recommended. We know the Industry well enough to realize that the appointment of such new committees is neither fantastic nor even unlikely. Perhaps, as we hinted last week, at the next annual meeting of The Institution of Gas Engineers we shall be told that it *might* be desirable to eliminate sulphur from town gas, that it *might* be desirable to appoint a small panel to O.K. previous panels and make the Industry look rather ridiculous.

Are we gloomy? Not a bit. Neither our purpose nor inclination is to criticize the Industry for the sake of criticism, but we do think many of its responsible executives should ask themselves why recommendations cannot be carried into effect —why, in brief, some of the reports in fact constitute farcical procedure. Because we do not think it right that the Industry should (of course, acting in all sincerity and with the loftiest of aims) make itself comic. If, for example, we want sulphur in our gas—*which apparently we do*—let us be honest about it. Every chemist outside the Industry knows that the technical difficulties in its removal do not exist. If we do not believe in the slogan "Sulphur must go," at least let us make it clear that our unfaltering stand is "Sulphur must stay." We use the sulphur question merely to exemplify our trend of thought and what, we suggest, is a pronounced attitude in the Industry. Our "standard of determination" does not seem to be high, and we wonder whether the intrinsic soundness of the carbonizing and gas-making process has been apt to dull efforts in some quarters. At any rate it has been made abundantly clear during the past few years that much tightening-up of practice can and must be carried out. All the Papers comprising the current Institution symposium once again emphasize this, and they are far from being gloomy or disheartening. They point the way; but we do need a standard of determination to translate precept into practice.

From the general let us turn for a moment to a particular thought on efficiency as commented on by Mr. Dixon in his Paper, which we publish in full, together with a verbatim report of the discussion, in our issue to-day. The desirability of comparing the performance of one works with another is recognized, and we have devoted much space this year to discussion of the "fuel usage index" as a means of stepping-up efficiency. To our mind the fuel usage index is a most useful figure and is, within limits, an approximate measure for comparative purposes; it does, of course, need knowledgeable interpretation. During the discussion on Mr. Dixon's contribution one of the speakers queried whether it serves any good purpose to compare undertaking with undertaking on any arbitrary basis or general yardstick lines, whatever the formula used, be it the fuel usage index or the method proposed by Mr. Dixon, on which we will comment shortly. His argument was that to compare undertaking with undertaking is to create antagonism and bad feeling —that, for example, Mr. X, who may have inherited the mistakes of his predecessor, will justifiably resent comparison with Mr. Y, who within recent years may have had the opportunity of constructing a brand new works on a new site. We think that comparison, with full knowledge and understanding of the facts of each case, ought not in any way to engender antagonism and bad feeling, otherwise the spirit abroad in the Gas Industry is a very poor one. We feel sure that, properly interpreted, comparisons can be exceedingly helpful as a guide to better efficiency—efficiency of the works as a whole, as well as the efficiency of a particular unit of plant. The reasons for low efficiencies may well be understandable, but it does not follow that such low efficiencies ought to be either ignored or hidden away.

And now a word about Mr. Dixon's formula, which differs in degree but not in kind or essence from the fuel usage index. We like the fuel usage index and we have no quarrel at all with Mr. Dixon's conception, which, we know, has caused a certain amount of surprise, if not confusion, in certain quarters. He suggests that performance comparisons would best be made in the form of "therms of gas made per ton of standard coal gasified." We quote Mr. Dixon: "A gas-works takes from the common pool of fuels one ton of coal (300 therms). It returns coke, breeze, and tar to the common pool to the extent of, say, 165 therms. Thus 135 therms have been absorbed by the gas-works in the production of, say, 75 therms of gas. 300 therms (one ton of standard coal) would therefore be absorbed in the production of 167 therms of gas. In other words, the comparative performance of the gas-works is 167 therms of gas per ton of standard coal gasified." We would suggest that the conception would perhaps be clearer if "standard coal substance consumed" was substituted for "standard coal gasified." Let us translate this conception in terms of gas production efficiency, taking the case of an undertaking making 10 cwt. of coke (140 therms) and 10 gallons of tar (20 therms) from a ton of coal (300 therms). The therms used in the process amount to 140. But out of this 140 therms we have made, say, 80 therms of gas, and we can see that the efficiency of gas production is 57%, or 171 therms per 300 therms of coal substance consumed.

Shall we look at the matter from another angle, before we file Mr. Dixon's suggestions away? Suppose we put our 10 cwt. of coke in a water gas plant, self-contained as regards steam. If we gasify the coke properly we shall get something like 75 to 80 therms of blue water gas. We will take the calorific value of coke as 280 therms a ton (we are not far out in this). And we see that 75 therms of gas have been produced for an expenditure of 140 therms. Our efficiency of gas production is around 53%, and our "Dixon figure" is 160 therms per 300 therms consumed. And that is why we have no quarrel with Mr. Dixon's conception, which, it appears to us, fits in admirably with current technical ideas on the carbonizing and gas-making process. And that is why we disagree with the idea expressed during the discussion that the results of Mr. X ought not in fairness and decency to be compared with the results of Mr. Y.

From Retort House to Farm

We learn with interest that the Newcastle upon Tyne and Gateshead Gas Company has completed arrangements for the placing of a party of key men from one of its important works for temporary work on a large farm in the county for a period of four weeks. At this time of the year there is a seasonal drop in the production of gas, and a certain number of men not required for shift work in the retort houses normally are transferred to day work. For four wartime winter periods these men have been employed in retort houses working under blackout conditions, and it was felt that they might usefully be employed upon the land for an appreciable period where their assistance would be of value to a farmer, and from which the men themselves would benefit due to the changed circumstances through working in the open air. Each man has been selected by the Works Committee as a suitable person, and his works manager has, with some difficulty, been able to release him. The men will be housed in a farm building, and a resident in the village has agreed to cater for them. The scheme has had the active assistance of the War Agricultural Executive Committee, and they have issued a certificate entitling the men to special rations while so engaged. Each man has volunteered for the work, and the Trade Union of which they are members has welcomed the scheme. It is hoped to organize three such further parties each to last for four weeks, arranged to coincide with the peak of the harvesting operations in the district. In order that the volunteers should not suffer any loss of earnings, the Company is making up the difference in their earnings between the wages received at the farm and those which they would have received had they been at their normal work.

Fuel Economy

We have had the opportunity of visiting an excellent fuel economy exhibition at the Watson House Laboratories of the Gas Light and Coke Company. It is a most informative display, telling in effective fashion in what directions housewives can best economize in fuel to keep within their fuel target without undue inconvenience. The lessons, demonstrated ingeniously by chart and appliance, are clearly set out for all to grasp readily.

Personal

Mr. A. H. SLADE, Secretary to the Stockport Gas Department, has been appointed Commercial Secretary to the Smethwick Gas Undertaking, and will take up his new duties early in August.

* * *

The Directors of Berwick and Tweedmouth Gaslight Company, Ltd., have appointed Mr. S. P. ORMEROD as their Works Superintendent. Mr. Ormerod was formerly with the Bridlington Gas Company.

As the **Final Part** of the training course for officers of the Girls' Training Corps, an exhibition was arranged to show them how to instruct members of their units in solving various domestic problems brought about by the present man-power shortage. Several organizations took part, the Women's Gas Council arranging an interesting Handywoman's display covering some of the more technical aspects of the use of gas and gas appliances in the home. A demonstrator was present to explain the appliances, and many informative leaflets were distributed giving advice on the care and maintenance of all gas appliances.

§§

Letter to the Editor

Sir David Milne-Watson

DEAR SIR,—In your issue of April 21, which has just come to my desk, I read your leader on Sir David Milne-Watson's retirement.

It is a matter of sadness to me that his health, from what you say seems impaired. He has been so long connected with the Industry and such a stalwart and powerful influence for its good that I cannot imagine his being replaceable.

I know what a tower of strength he has been to his Company and to the Gas Industry in Great Britain. Perhaps you have not realized that over here he is just as highly regarded and has been an inspiration to all of us who know him. We speak of him often in terms of respect and admiration for his accomplishments.

Brooklyn Union Gas Company,
176, *Remsen Street,*
Brooklyn, New York.
May 14, 1943.

Yours faithfully,
CLIFFORD E. PAIGE,
President.

Melchett Medallist, 1943

It has been decided that the Melchett Medal, which is awarded annually by the Institute of Fuel, shall be presented this year to Dr. E. S. Grumell, C.B.E., Dr. des Sc., M.I.Min.E., F.Inst.F. This medal is the highest award in the gift of the Institute of Fuel, and is being presented to Dr. Grumell in recognition of the outstanding work tending to the economical use of fuel which he has done over a long period.

Dr. Grumell has, for many years, been head of the coal research laboratories of Imperial Chemical Industries, Ltd., and the research and experimental work carried out by him, having been published for the benefit of the community as well as for that of his Company, has resulted in improving the design of many combustion appliances and, consequently, in the saving of large quantities of fuel.

In addition to the foregoing, Dr. Grumell was appointed Chairman of the Fuel Efficiency Committee set up by the Mines Department and later carried on under the Ministry of Fuel and Power.

The medal will be presented at the Annual Conference of the Institute of Fuel to be held in October next.

Diary

June 24.—Midland Association—Meeting in Birmingham, 2.30 p.m. Address by Dr. J. G. King, Director of the Gas Research Board.

June 25.—Waverley Association, Edinburgh, 10.30 a.m. Presidential Address of Mr. W. M. Henderson.

June 28.—Gas Companies' Protection Association, Committee Meeting, 5, Victoria Street, S.W. 1, 2.30 p.m.

Dividends

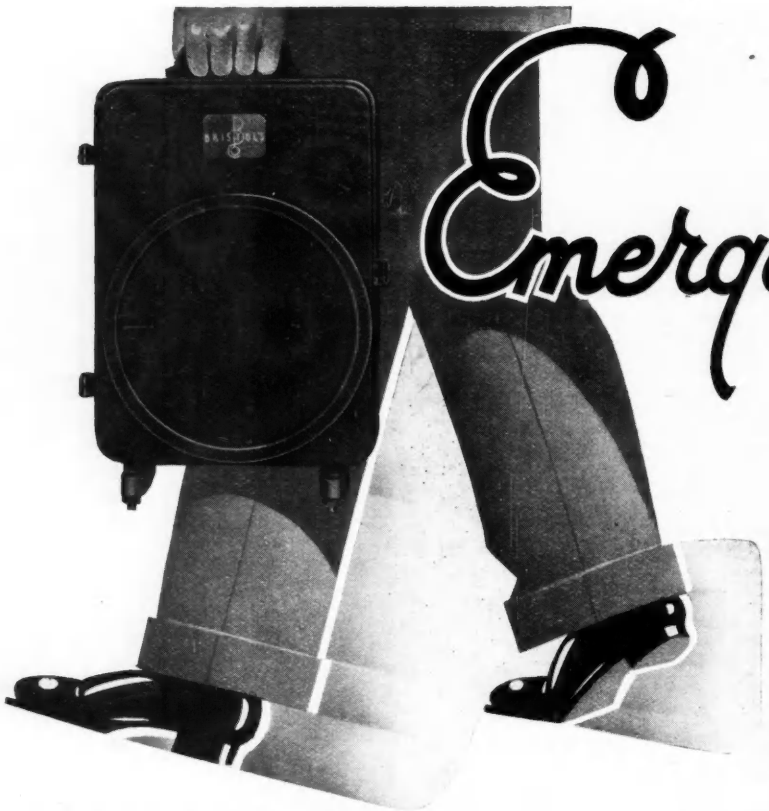
Caledonian Gas Corporation.—Revenue for 1942, £35,733 (£33,497). Income-tax, interest, and expenses absorbed £22,072 (£20,578), leaving £13,661, while £1,540 (£1,332) was brought in. Dividend on Ordinary shares raised from 4½% to 5%, less tax. A sum of £871 is written off formation and other expenses, and £1,629 is carried forward.

Cape Town and District Gas Light and Coke Company.—No dividend was declared at the annual meeting in London on June 4. Sir George Barstow, Chairman, announced that the reserve for renewals of plant, &c., had been increased from £5,000 to £15,000. Work on renewals had been deferred owing to war conditions, but much of the required material had now reached Cape Town and urgent work on plant renewals would be expedited as the necessary skilled labour became available.

Plymouth and Stonehouse Gas Light and Coke Company.—Dividends are recommended at £4 17s. 6d.% on Ordinary shares (against £2 10s.% last year), 14s. 6d. per share on "Additional" shares (against 7s. 6d.), and 13s. 6d. per share on New shares (against 7s.), less income-tax.

South-Eastern Gas Corporation.—The Directors recommend a final Ordinary dividend of 2½% actual, less tax, making with the interim dividend already paid 4% actual, less tax, for the year to March 31 (same as for the previous year).

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.



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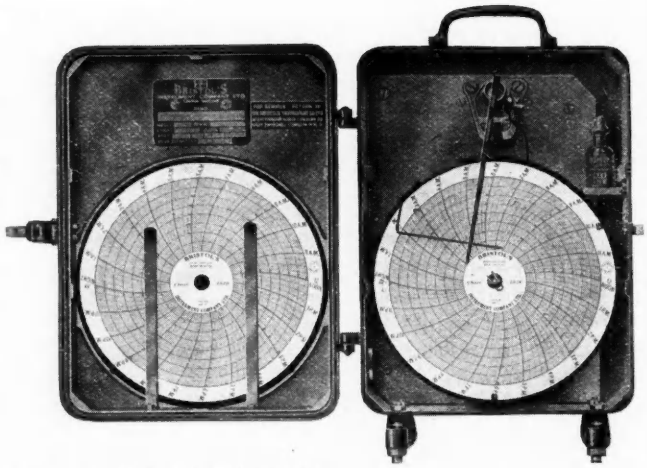

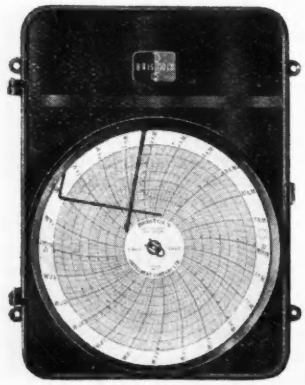

The Rectangular shape of a Bristol's Recorder—Model 22M Portable, Wall Fixing or Panel Mounting type—indicates that the instrument incorporates the Bristol's long radius, narrow angle pen arm. This helps to maintain the calibration accuracy of the element, allows a heavier gauge material to be used and reduces the possibility of over stressing—a three point contribution to permanent accuracy and reliability.

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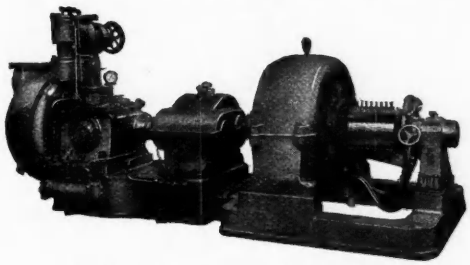

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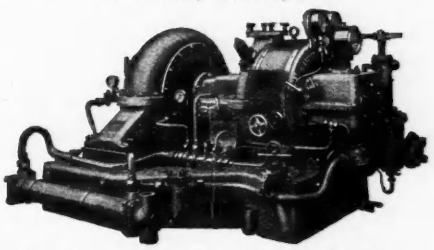

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GAS JOURNAL, JUNE 23, 1943

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EDITORIAL NOTES

EFFICIENCY

"TOWARDS Efficiency" seems to us to crystallize in a phrase the business part of the Institution meeting on June 9, though we did query last week whether the Gas Industry, sufficiently pleased with its performance and its potentialities, had decided to revel in discussion for discussion's sake, to hold a forum for a day, and then for a year, maybe, go back to routine quite happily. We hope we are wrong, but our thought was not a fleeting one, and we were glad that Mr. Dixon should sting with a little acid the concluding sentences of his contribution to this year's "symposium." He spoke of the recommendations of panels dealing with manufacturing and distribution practice; he recalled the comments of Dr. E. W. Smith a couple of years ago, who, outlining the problems before the Industry at the time (they are the problems of to-day), asked quite simply, "What are we going to do about it?" Two valuable years have passed, and we sympathize with Mr. Dixon when he expresses some bewilderment about the Industry's "Standard of Determination." Of course, the Industry has had its troubles since September of 1939, and its services—vital services—are not forgotten. Yet it seemed to us, as the editorial columns of the "JOURNAL" testify, that the executives of many undertakings had positively to be shaken to make it sink in that benzole should be recovered from gas in the all too obvious national interest. In 1940 gas engineers and managers, particularly in the Provinces, were arguing on lines of "Will it Pay?" In 1941, and again the "JOURNAL" testifies to this, they were arguing on the same lines, and it appeared to us to be an indulgence in discussion for discussion's sake. During the war, panels, as Mr. Dixon said, have reported. His words were: "The implementation of the reports [I.G.E. reports] and the attainment of the standards already set are urgent and are matters for every individual." This is true enough, and we can only hope that a further set of committees will not be appointed to report on the findings of the committees which in the heat of war have sat and have recommended. We know the Industry well enough to realize that the appointment of such new committees is neither fantastic nor even unlikely. Perhaps, as we hinted last week, at the next annual meeting of The Institution of Gas Engineers we shall be told that it *might* be desirable to eliminate sulphur from town gas, that it *might* be desirable to appoint a small panel to O.K. previous panels and make the Industry look rather ridiculous.

Are we gloomy? Not a bit. Neither our purpose nor inclination is to criticize the Industry for the sake of criticism, but we do think many of its responsible executives should ask themselves why recommendations cannot be carried into effect —why, in brief, some of the reports in fact constitute farcical procedure. Because we do not think it right that the Industry should (of course, acting in all sincerity and with the loftiest of aims) make itself comic. If, for example, we want sulphur in our gas—*which apparently we do*—let us be honest about it. Every chemist outside the Industry knows that the technical difficulties in its removal do not exist. If we do not believe in the slogan "Sulphur must go," at least let us make it clear that our unfaltering stand is "Sulphur must stay." We use the sulphur question merely to exemplify our trend of thought and what, we suggest, is a pronounced attitude in the Industry. Our "standard of determination" does not seem to be high, and we wonder whether the intrinsic soundness of the carbonizing and gas-making process has been apt to dull efforts in some quarters. At any rate it has been made abundantly clear during the past few years that much tightening-up of practice can and must be carried out. All the Papers comprising the current Institution symposium once again emphasize this, and they are far from being gloomy or disheartening. They point the way; but we do need a standard of determination to translate precept into practice.

From the general let us turn for a moment to a particular thought on efficiency as commented on by Mr. Dixon in his Paper, which we publish in full, together with a verbatim report of the discussion, in our issue to-day. The desirability of comparing the performance of one works with another is recognized, and we have devoted much space this year to discussion of the "fuel usage index" as a means of stepping-up efficiency. To our mind the fuel usage index is a most useful figure and is, within limits, an approximate measure for comparative purposes; it does, of course, need knowledgeable interpretation. During the discussion on Mr. Dixon's contribution one of the speakers queried whether it serves any good purpose to compare undertaking with undertaking on any arbitrary basis or general yardstick lines, whatever the formula used, be it the fuel usage index or the method proposed by Mr. Dixon, on which we will comment shortly. His argument was that to compare undertaking with undertaking is to create antagonism and bad feeling —that, for example, Mr. X, who may have inherited the mistakes of his predecessor, will justifiably resent comparison with Mr. Y, who within recent years may have had the opportunity of constructing a brand new works on a new site. We think that comparison, with full knowledge and understanding of the facts of each case, ought not in any way to engender antagonism and bad feeling, otherwise the spirit abroad in the Gas Industry is a very poor one. We feel sure that, properly interpreted, comparisons can be exceedingly helpful as a guide to better efficiency—efficiency of the works as a whole, as well as the efficiency of a particular unit of plant. The reasons for low efficiencies may well be understandable, but it does not follow that such low efficiencies ought to be either ignored or hidden away.

And now a word about Mr. Dixon's formula, which differs in degree but not in kind or essence from the fuel usage index. We like the fuel usage index and we have no quarrel at all with Mr. Dixon's conception, which, we know, has caused a certain amount of surprise, if not confusion, in certain quarters. He suggests that performance comparisons would best be made in the form of "therms of gas made per ton of standard coal gasified." We quote Mr. Dixon: "A gas-works takes from the common pool of fuels one ton of coal (300 therms). It returns coke, breeze, and tar to the common pool to the extent of, say, 165 therms. Thus 135 therms have been absorbed by the gas-works in the production of, say, 75 therms of gas. 300 therms (one ton of standard coal) would therefore be absorbed in the production of 167 therms of gas. In other words, the comparative performance of the gas-works is 167 therms of gas per ton of standard coal gasified." We would suggest that the conception would perhaps be clearer if "standard coal substance consumed" was substituted for "standard coal gasified." Let us translate this conception in terms of gas production efficiency, taking the case of an undertaking making 10 cwt. of coke (140 therms) and 10 gallons of tar (20 therms) from a ton of coal (300 therms). The therms used in the process amount to 140. But out of this 140 therms we have made, say, 80 therms of gas, and we can see that the efficiency of gas production is 57%, or 171 therms per 300 therms of coal substance consumed.

Shall we look at the matter from another angle, before we file Mr. Dixon's suggestions away? Suppose we put our 10 cwt. of coke in a water gas plant, self-contained as regards steam. If we gasify the coke properly we shall get something like 75 to 80 therms of blue water gas. We will take the calorific value of coke as 280 therms a ton (we are not far out in this). And we see that 75 therms of gas have been produced for an expenditure of 140 therms. Our efficiency of gas production is around 53%, and our "Dixon figure" is 160 therms per 300 therms consumed. And that is why we have no quarrel with Mr. Dixon's conception, which, it appears to us, fits in admirably with current technical ideas on the carbonizing and gas-making process. And that is why we disagree with the idea expressed during the discussion that the results of Mr. X ought not in fairness and decency to be compared with the results of Mr. Y.

From Retort House to Farm

We learn with interest that the Newcastle upon Tyne and Gateshead Gas Company has completed arrangements for the placing of a party of key men from one of its important works for temporary work on a large farm in the county for a period of four weeks. At this time of the year there is a seasonal drop in the production of gas, and a certain number of men not required for shift work in the retort houses normally are transferred to day work. For four wartime winter periods these men have been employed in retort houses working under blackout conditions, and it was felt that they might usefully be employed upon the land for an appreciable period where their assistance would be of value to a farmer, and from which the men themselves would benefit due to the changed circumstances through working in the open air. Each man has been selected by the Works Committee as a suitable person, and his works manager has, with some difficulty, been able to release him. The men will be housed in a farm building, and a resident in the village has agreed to cater for them. The scheme has had the active assistance of the War Agricultural Executive Committee, and they have issued a certificate entitling the men to special rations while so engaged. Each man has volunteered for the work, and the Trade Union of which they are members has welcomed the scheme. It is hoped to organize three such further parties each to last for four weeks, arranged to coincide with the peak of the harvesting operations in the district. In order that the volunteers should not suffer any loss of earnings, the Company is making up the difference in their earnings between the wages received at the farm and those which they would have received had they been at their normal work.

Fuel Economy

We have had the opportunity of visiting an excellent fuel economy exhibition at the Watson House Laboratories of the Gas Light and Coke Company. It is a most informative display, telling in effective fashion in what directions housewives can best economize in fuel to keep within their fuel target without undue inconvenience. The lessons, demonstrated ingeniously by chart and appliance, are clearly set out for all to grasp readily.

Personal

Mr. A. H. SLADE, Secretary to the Stockport Gas Department, has been appointed Commercial Secretary to the Smethwick Gas Undertaking, and will take up his new duties early in August.

* * *

The Directors of Berwick and Tweedmouth Gaslight Company, Ltd., have appointed Mr. S. P. ORMEROD as their Works Superintendent. Mr. Ormerod was formerly with the Bridlington Gas Company.

As the Final Part of the training course for officers of the Girls' Training Corps, an exhibition was arranged to show them how to instruct members of their units in solving various domestic problems brought about by the present man-power shortage. Several organizations took part, the Women's Gas Council arranging an interesting Handywoman's display covering some of the more technical aspects of the use of gas and gas appliances in the home. A demonstrator was present to explain the appliances, and many informative leaflets were distributed giving advice on the care and maintenance of all gas appliances.

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Letter to the Editor

Sir David Milne-Watson

DEAR SIR,—In your issue of April 21, which has just come to my desk, I read your leader on Sir David Milne-Watson's retirement.

It is a matter of sadness to me that his health, from what you say seems impaired. He has been so long connected with the Industry' and such a stalwart and powerful influence for its good that I cannot imagine his being replaceable.

I know what a tower of strength he has been to his Company and to the Gas Industry in Great Britain. Perhaps you have not realized that over here he is just as highly regarded and has been an inspiration to all of us who know him. We speak of him often in terms of respect and admiration for his accomplishments.

Brooklyn Union Gas Company,
176, *Remsen Street,*
Brooklyn, New York.
May 14, 1943.

Yours faithfully,
CLIFFORD E. PAIGE,
President.

Melchett Medallist, 1943

It has been decided that the Melchett Medal, which is awarded annually by the Institute of Fuel, shall be presented this year to Dr. E. S. Grumell, C.B.E., Dr. des Sc., M.I.Min.E., F.Inst.F. This medal is the highest award in the gift of the Institute of Fuel, and is being presented to Dr. Grumell in recognition of the outstanding work tending to the economical use of fuel which he has done over a long period.

Dr. Grumell has, for many years, been head of the coal research laboratories of Imperial Chemical Industries, Ltd., and the research and experimental work carried out by him, having been published for the benefit of the community as well as for that of his Company, has resulted in improving the design of many combustion appliances and, consequently, in the saving of large quantities of fuel.

In addition to the foregoing, Dr. Grumell was appointed Chairman of the Fuel Efficiency Committee set up by the Mines Department and later carried on under the Ministry of Fuel and Power.

The medal will be presented at the Annual Conference of the Institute of Fuel to be held in October next.

Diary

June 24.—Midland Association—Meeting in Birmingham, 2.30 p.m. Address by Dr. J. G. King, Director of the Gas Research Board.

June 25.—Waverley Association, Edinburgh, 10.30 a.m. Presidential Address of Mr. W. M. Henderson.

June 28.—Gas Companies' Protection Association, Committee Meeting, 5, Victoria Street, S.W. 1, 2.30 p.m.

Dividends

Caledonian Gas Corporation.—Revenue for 1942, £35,733 (£33,497). Income-tax, interest, and expenses absorbed £22,072 (£20,578), leaving £13,661, while £1,540 (£1,332) was brought in. Dividend on Ordinary shares raised from 4½% to 5%, less tax. A sum of £871 is written off formation and other expenses, and £1,629 is carried forward.

Cape Town and District Gas Light and Coke Company.—No dividend was declared at the annual meeting in London on June 4. Sir George Barstow, Chairman, announced that the reserve for renewals of plant, &c., had been increased from £5,000 to £15,000. Work on renewals had been deferred owing to war conditions, but much of the required material had now reached Cape Town and urgent work on plant renewals would be expedited as the necessary skilled labour became available.

Plymouth and Stonehouse Gas Light and Coke Company.—Dividends are recommended at £4 17s. 6d.% on Ordinary shares (against £2 10s.% last year), 14s. 6d. per share on "Additional" shares (against 7s. 6d.), and 13s. 6d. per share on New shares (against 7s.), less income-tax.

South-Eastern Gas Corporation.—The Directors recommend a final Ordinary dividend of 2½% actual, less tax, making with the interim dividend already paid 4% actual, less tax, for the year to March 31 (same as for the previous year).

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

STANDARDS OF TECHNICAL PERFORMANCE*

By G. DIXON, B.Eng., M.Inst.C.E.,

Engineer and Manager, Nottingham Corporation Gas Department

The Gas Industry is preparing to face up squarely to post-war rationalization. There must be no complacency towards the future just because of the success of the past service which the Industry has been privileged to render to the country as a whole and to the consumers in particular. Many committees have been working for some time and they are making a careful survey of the Industry as the essential basis of planning for something better.

In these notes the Author's task is not to offer anything new but to centre attention upon the standards of manufacture and distribution which have been accepted as good practice, and to ask every individual worker in the Gas Industry to give careful attention to the attainment of these standards of efficiency in order that the Industry's customers may have the best service it can give.

The Author feels strongly that there is today far too great a discrepancy between the standards of service being given by Undertakings throughout the Country. Nothing but enthusiasm and determination to give of the best will meet the requirements of the post-war social and industrial period. The technical man or the administrative body that is not alive to the importance of applying modern methods or is not prepared to implement the recommendations, will find no place in the rationalized Gas Industry. The Author is obviously pointing the finger at those Undertakings which have not kept pace with development, either through lack of opportunity or through lack of inclination to spur themselves to maximum service. But the standing of any industry is influenced by the service rendered by the wayward members. The Gas Industry cannot afford to neglect the opportunity that presents itself in this post-war planning era.

It will be appreciated that these notes are intended to refer to what may be termed the short-term policy; that is, they refer to short-comings which can be attended to at once.

Long-term policy, involving radical changes in manufacture or distribution, will be determined by the continued findings of the Gas Research Board and other bodies interested in the long-term technical and economical development of coal carbonization. The Gas Industry will not stand still. There is evidence that outstanding possibilities are engaging the attention of its enthusiastic workers. One of the most heartening signs of a healthy Gas Industry is the number of excellent Papers and Addresses that have been presented during the past two years, even in the stress of war-time activities. Pointers and standards have been set by various authors, and this short Paper is merely an attempt to bring together, as examples for all to follow, the products of the work and thoughts of those who are thinking for the Industry.

Although not coming strictly under the heading of technical standards, there are one or two matters of a general nature that are of importance and are worthy of careful consideration.

Works Lay-Out

Gas works practice is admittedly a chemical engineering operation but there is no reason why it should not be carried out in a clean and orderly manner. In this connexion it is regretted that films are still being sponsored for presentation to the public, depicting retort house and general gas works practices that are not only prehistoric but which represent conditions which are entirely false in properly-designed and efficiently-conducted manufacturing plants. The prestige of the Industry is much enhanced by smart appearance of Works and the cost of attention to this subject is repaid many times over.

There are many Gas Works in which natural levels and amenities have been taken into good account and which are laid out and maintained in a way that indicates a full appreciation of the value of the welfare of operatives as a contribution to high efficiency. There are Undertakings, both municipally and company-owned, in which care has been taken to plan or rebuild the plant in excellent style, with available spare land laid out as gardens worthy of any park authority. The standard set should be capable of attainment by any Undertaking if its executives have the will. High-class work cannot be obtained by "sloppy" operation and welfare facilities cannot be regarded as non-revenue-producing. The effects of "tidy" conditions are felt by operatives and consumers alike.

Education of Operatives

There is a great lack of appreciation of the value of interesting operatives so that they can feel they are part of an important industry. Men will not be so capable of good service if they are unable to realize why they are asked to do certain work in a certain way, and unless they are taught to see how their work dove-tails into the whole of the activities of the Undertaking.

There is a great need for simple lectures, carefully prepared cartoon sound films or other educational features which can be extended to the humblest of Gas Works. They are recommended as normal contributions to welfare conditions.

Technical Staff

No Works can attain efficient results unless adequately controlled by properly trained staff. Many Undertakings do not yet realize that modern gas works plant is costly and can be abused, if not destroyed, by inefficient technical supervision. This necessity applies equally to the distribution and utilization side. Gas is a valuable concentrated form of heat. Its efficient use in consumers' appliances is the responsibility of the Gas Undertaking, and neglect of this responsibility must result in the consumer being dissatisfied and in untold discredit to all concerned.

Unfortunately, the inducement offered to prospective technical entrants to the Gas Industry has been sadly insufficient, and the present shortage has been emphasized by the calling-up of the younger members of the staffs for service with H.M. Forces. The immediate position, therefore, is embarrassing and the formation of various district mutual aid schemes and the pooling of technical resources are welcomed, in order that facilities can be given to Undertakings which find themselves in need of such assistance. It is believed that much benefit will result from the present modest beginnings, and it is hoped that Undertakings will give and accept assistance with a confident spirit of mutual good will between men with common interests.

Coal

The attainment of a satisfactory standard of gas manufacture remains impracticable whilst the raw product—coal—continues to be a variable. Plant efficiency is highest where conditions are stable, and the present method of selling and buying coal leaves much to be desired.

It is not sufficient to purchase coal merely under trade name. Coals from the same pit may be a mixture of three or four seams coming up the same shaft in proportions which vary from hour to hour, necessitating a constant watch and alteration of conditions on the carbonizing plant and resulting in a loss of thermal yield and often in excessive wear and tear on retorts due to temperature variations and changing physical and chemical conditions.

The remedy can be applied either by demanding that collieries guarantee that coal shall be drawn from the same pit and seam (or constant proportions of varying seams) or by installing efficient mixing plants to ensure that the fuel supplied to the retorts shall be such as to require stable conditions of carbonization.

It is not suggested that gas works coals should be drawn from the richest pits. Gas plants are designed to carbonize a wide variety of coals, but once a choice has been made and plant conditions set there should be reasonable guarantee that constant quality will be supplied throughout the period of contract.

* Paper to the Institution of Gas Engineers, June 9.

Standards of Thermal Efficiency of Gas Manufacture

Coal Carbonization

Coal carbonization gives a thermal efficiency of over 80 per cent, that is to say, if a ton of coal containing, for instance, 300 therms of potential heat is carbonized so that it is converted into gas, coke, tar, etc., which together contain 240 therms, then 80 per cent of the heat value of the coal has been recovered.

It is this high process thermal efficiency that enables the Gas Industry to claim recognition from those interested in the national economics of fuel conservation.

The difference between the thermal efficiency figure and 100 gives the percentage of the original heat used or lost in the process and has come to be termed the fuel index.

It is the duty of all engineers to check up this fuel index figure continually so as to ensure that the coal is being carbonized with the expenditure of the least possible fuel consumption.

Water Gas Production

The corresponding figure of thermal efficiency in the case of blue water gas made in a water-gas generator may be taken as 60 per cent—representing good practice.

Comparative Standard of Performance of Gas Works

It is often desirable to compare one Works performance with another and it is obviously impossible to set such comparisons out as percentages owing to the variations in the methods of gas manufacture employed in different Works.

It is suggested that the comparisons would best be made in the form of "therms of gas made per ton of standard coal gasified"—a method based upon the recommendations* of Clerk, Smithells and Cobb in 1920.

The figure would mean this: A Gas Works takes from the common pool of fuels one ton of coal (300 therms). It returns coke breeze and tar to the common pool, to the extent of, say, 165 therms. Thus, 135 therms have been absorbed by the Gas Works in the production of, say, 75 therms of gas: 300 therms (one ton of standard coal) would therefore be absorbed in the production of $\frac{75 \times 300}{135} = 167$ therms of gas. In other words, the comparative performance of the Gas Works is 167 therms of gas per ton of standard coal gasified.

It should be noted that this method will give strictly comparative results whatever type of gas-making plant is used.

Producer Performance

Although the standards required for efficient producer operation are well known, there is evidence that they are not receiving the attention demanded, with the result that carbonizing is not satisfactory and the fuel consumption is wasteful.

Constant checking of producer condition is essential for the proper maintenance of settings and attention is drawn to the useful practical notes on fuel economy issued by the Ministry of Fuel and Power to all Undertakings.

Coke Quality

Unless and until scientific advancement brings about radical changes in gas manufacturing practice, it cannot be possible to legislate for any great change in the coke gas ratio of the Industry.

War conditions have resulted in much greater experience in the use of gas coke for domestic purposes, and it can be confidently expected that with the excellent constructive work of the Coke Associations and the future desire for smokeless towns, the claims of coke will provide a favourable opportunity for an improved market for the main by-products if the Industry is prepared to cater for it.

The standards laid down in the recommendations of the Institution's Committee of Enquiry on Coke Quality* are therefore of prime importance.

Have all Undertakings taken steps to put the recommendations into effect?

Screening and sizing are imperative—even in the smallest Works and it is suggested that the time has arrived when the Coke Associations should restrict membership to those producers who are prepared to guarantee the standard quality of their product, especially with regard to sizes and moisture content.

Sulphur Removal

Responsible workers in the Industry who are in touch with the importance of the utilization standards, have long stressed the necessity of reducing the sulphur content of town gas, and it is difficult to understand the slow progress being made in this long overdue reform.

The evidence in favour has been so strong and so insistent that The Institution of Gas Engineers formed a Committee of Enquiry on Sulphur Removal. This Committee issued its Report† some 12 months ago and recommended as follows:

(1) As a first step the organic sulphur compound in all supplies of town gas should be reduced to 10 gr. per 100 cu. ft. before the gas is distributed to the public and that immediate steps should be taken by all Gas Undertakings, as soon as circumstances permit, to achieve this result.
(2) In view of the advantages which accrue when the sulphur content is reduced to 3 gr. per 100 cu. ft., Gas Undertakings should be encouraged to make better use of the facilities available to enable them to attain this lower limit.
(3) The possibility of the attainment of a still lower limit of sulphur content should be kept continually under review and processes designed to ensure this should be examined as they become known. Should a practical process be developed, steps should be taken to bring it to the notice of all Gas Undertakings.
(4) The possibility of obtaining a lower limit than 10 gr. of sulphur per 100 cu. ft. should not be allowed to cause delay in giving effect to Recommendation (1) above.

The post-war desirability of being able to accept space-heating load by the use of flueless heaters and the prospect of greatly enhanced consumer goodwill to be gained by low sulphur-content gas, far outweigh the cost of the process, and it is urged that it would be greatly to the advantage of the Industry if legislation were introduced without delay, limiting the sulphur content to comply with the foregoing recommendations.

Tar Standards

The wide variation in qualities of coals used and the freedom of choice of carbonizing plants necessarily lead to great differences in the characteristics of the crude tar produced. The elimination of these differences and the guaranteeing of the quality of the products are obtained by adequate technical processing in a tar distillation plant up to the standards laid down by the British Standards Institution.

The present war has again provided an opportunity of proving the satisfactory quality of road tars, thanks to the work of the British Road Tar Association.

It is considered desirable that the scope of the Association's activities should be enlarged with a view to satisfactory products being sold under its guarantee and the abolition of all non-specification tars from the market.

Gas Quality

Attention is again drawn to the standards of calorific value, specific gravity and characteristics of gas recommended in the Report of the Institution's Committee of Enquiry on Gas Quality*. Whilst retaining freedom of choice of calorific value according to local conditions, the absolute necessity of working within prescribed limits is stressed and it is assumed that Undertakings have taken such action as is necessary to ensure compliance with the standards set.

The wisdom of the freedom of choice of calorific value is confirmed by the present considerations of the Post-War Planning Sub-Committee on Manufacture and Distribution, and it is a privilege to have at this Meeting the Paper on calorific values by J. E. Davis, a member of that Sub-Committee.

In the interests of the prestige of the Gas Industry, attention is drawn to the following recommendations of the Committee

* Report on the Coal-Gas and Electrical Supply Industries of the United Kingdom, submitted to the President of The Institution of Gas Engineers by Sir Dugald Clerk, Prof. J. W. Cobb and Prof. A. Smithells on 14th April, 1919.
* *Inst. Gas Eng. Comm. No.* 252 (1942), p. 7.

† *Inst. Gas Eng. Comm. No.* 250 (1942), p. 8.
* *Inst. Gas Eng. Comm. No.* 249 (1942), p. 8.

of Enquiry on Gas Quality: "The Committee is disturbed to find that some 20 per cent of the total quantity of therms sold is not subject to examination by a Gas Examiner and it desires to recommend that the practice of examination be universally adopted throughout the Industry."

Distribution

There is no more valuable contribution to the Gas Industry than the growing appreciation that good gas manufacturing practice is only so much waste of money unless it is backed up by efficient distribution and sales policy.

Evidence before the Gas Quality Committee showed a growing tendency to peak-load hours with consequent large variations of mains pressures. Standards are recommended and must be regarded as obligatory on all Undertakings.

The consideration of the rationalization and reconstruction of the Gas Industry and the visualization of the greatly increased loads that it may be called upon to meet, have focused attention upon the Industry's ability to design economic distribution systems. Recently much valuable experience has been gained as the result of war-time conditions, necessitating the use of high-pressure mains and pumping for long distances where there has been interconnexion of neighbouring districts.

All gas engineers are indebted to several experts who have presented communications covering modern distribution schemes during the past year, notably the paper by W. Hodkinson and H. B. Taylor, of the West Yorkshire Distribution Company, and the memorandum by H. J. Escreet to the Post-War Planning Sub-Committee on Manufacture and Distribution, and the latter's further contribution on the subject, presented to this Meeting, is welcomed.

Size of Manufacturing Works

The Manufacture and Distribution Sub-Committee of the Post-War Planning Committee has collected many statistics which have shown that the size of a Works is not a measure of its ability to obtain efficiency, provided, of course, that the conditions allow of the plant being operated throughout the 24 hours.

It is known, however, that there is a relationship between the size of an Undertaking and its economic policy of employing adequate or suitable staffs for control.

The fault lies often with the owners of the Undertaking, and the formation of the Regional Gas Advisory Boards as mutual help organizations is welcomed. The Author believes they will do their best work by gaining the confidence of Undertakings and in helping them with immediate difficulties so that they will be willing to reciprocate by giving attention to the standards required in the future.

It is not intended in these notes to discuss the question of inter-linkage of main systems or of amalgamation of Undertakings. These are, of course, matters which may lead to economic rationalization, quite apart from the size or efficiency of the manufacturing plants involved.

Standard Costing

One of the factors militating against the attainment of satisfactory standards has been the absence of comparative statistical information, particularly of the operational and costing sides.

The records of many Undertakings do not permit of accurate ascertainment of performance of works plant. A Sub-Committee on Methods of Charge and Statistics has been set up by the Post-War Planning Committee of the British Gas Federation, and its report is awaited with keen interest.

Managerial Standards

Although not included in his terms of reference, the Author desires, in passing, to stress the importance of an appreciation of business methods to ensure consumers' satisfaction and goodwill.

The man who sells the gas, coke, etc.—and he must be a technical man who is *au fait* with utilization—has not been given the position he deserves in many cases. Psychology cannot be divorced from the consideration of desirable standards in the control of Undertakings and the status of any industry must always be judged according to the men who represent it before its customers.

Standards of Determination

Members of this Institution have reason to be grateful for the guidance that has been offered to them during the past war years.

Men have come forward to contribute eminently practicable short Papers; much work has preceded the recommendation of panels dealing with manufacturing and distribution practice; the Industry has been spurred on to maximum effort to maintain the increased output of gas for war purposes; and gas engineers record with gratitude the sterling work done by their friend, Dr. E. W. Smith, in his constructive efforts to put the Industry on to its rightful footing. His outspoken contribution to the discussion on the Symposium at the June, 1941 Meeting of this Institution will be recalled, when he outlined the problems before the Industry and asked "What are we going to do about it?"

Two valuable years have passed. The Author cannot resist the temptation to ask—What is the Gas Industry's Standard of Determination?

The implementation of the Reports and the attainment of the standards already set are urgent and are matters for every individual. Is there not too much tendency for each to neglect his duty on the excuse that he is waiting for the publication of the complete scheme for the rationalization of the Industry?

DISCUSSION

Mr. **E. Crowther** (Newcastle upon Tyne): On first reading through Mr. Dixon's Paper I found myself so fully in agreement with his remarks as to decide there was little that I could add to the discussion. Further reflection, however, has led me to hope that I might usefully underline one or two of his points.

As one of his colleagues on the Gas Quality Committee I am glad to see that both this and a subsequent Paper will give an overdue opportunity for discussion of that Committee's Report, which, I believe, gave rise to surprise and perhaps disappointment in some quarters in that standardization of calorific value was not recommended. For my own part, nothing that has transpired since its publication had altered my views, but I shall be keenly interested in any remarks upon it which may emerge from these discussions.

Turning to the Report on Sulphur Removal, I could have wished that the Committee had expressed limiting figures in terms of the therm of gas. To speak of sulphur content per unit volume of gas ignores the fact that a volumetric percentage which may be tolerable in a gas of 500 C.V. may be far from satisfactory in a gas of lower C.V., of which a correspondingly greater volume must be burned to give an equal emission of heat.

On the subject of coal, Mr. Dixon has spoken of the loss of efficiency and the increased wear and tear attendant upon variations in the nature of the material supplied. An even greater disability under which too many of us suffer to-day lies in the increased ash content of gas coals. With a few creditable exceptions—which we shall do well to remember when the time comes that we can give practical expression to our views—colliery companies have made little endeavour to maintain pre-war standards in this respect. The Eighth Report of the Select Committee on National Expenditure recognizes and deplores this tendency. Moreover, the present system of pit targets, bonus calculations, and the like, encourages lack of attention to this matter, and indicates either complete ignorance of psychology, or a cynical disregard for its consequences on the part of those responsible for it. Indeed, if the men working on the picking belt do their job conscientiously they are in the unhappy position of sabotaging the pit target and the colliery bonus as the system operates. In the meantime, the Gas Industry and its consumers suffer, without redress.

These remarks are again reflected in coke quality, upon which the Paper also comments. Here however, I, for one, am anxious to know when we may expect the second part of the Coke Quality Report. It has seemed to me that the Committee has begun, not at the beginning, but after the intrinsic qualities of the coke have been largely fixed. I would suggest to them that a better approach might be to prepare limiting specifications for the different types of usage to which coke may be put, as, for example, the open fire, the domestic water heater, the commercial central heating plant, gas producers, &c. The specifications would presumably deal with size, ash content, and fusion point, density, shatter index, and reactivity. With these before us we could determine in which markets our products were suitable, and either avoid unsuitable markets or attempt to modify our coke to make it suitable. At present we tend to presume, wrongfully, that if it complies with the standards laid down by the Committee, our coke is suitable for all the purposes for which coke is used.

Mr. **J. T. Haynes** (Bournemouth): Mr. Dixon, in attempting to lay down standards of technical performance, states that he is pointing the finger at those undertakings which have not kept pace with development, but we all know that the more progressive the undertaking the more conscious it is of failure to achieve its ideal. It is the laggard who is complacent and unconscious of the pointing finger. There are

sufficient active and virile undertakings in this country for Mr. Dixon to be assured of a good following, and, as in years past, I give him my support wholeheartedly.

At the same time, while agreeing with much of what he says, I am not prepared to accept without question his proposals for the use of a modified Pexton formula in connexion with the comparative standard of performance in gas-works. As regards the formula itself, the coke and tar which are said to be put back into the "pool" of fuel have qualities very different from those of the coal initially taken from the "pool," and they are not interchangeable with it. In so far as they have advantages over raw coal, those advantages should be credited in some way to the operation of which they are secondary products—*i.e.*, the carbonization process.

The Gill formula, on the other hand, does give credit for these secondary products by taking into account the total heat input and relating it to the total heat output of the process. The two formulae are numerically related, but why juggle about with figures to get a misleading result and one which is detrimental to the Industry? Whatever formula may be used, do we want to compare one undertaking with another? To do so would only create antagonisms and bad feeling. Mr. X, who has inherited the mistakes of his predecessor, will justifiably resent direct comparison with Mr. Y, who within recent years has had the opportunity of constructing a brand new works on a new site. The two cannot be compared. No two works can be compared without taking into account the many factors affecting the operations of each, and so far no simple formula has been evolved for doing this. The use of carburetted water gas, for example, is dictated to a great extent by economic considerations of the coke market and the fluctuating demand for gas rather than by considerations of overall technical efficiency. The degree of power utilization on the works is another factor. Comparing different works, as Mr. Dixon suggests, is one matter, but I suggest that what Mr. Dixon really wants, and has not made clear in his Paper, is to assess the degree of efficiency of any particular works and the individual gas-making units in that works. This is another matter altogether and a far more important one. One can use any agreed formulae to calculate the maximum possible efficiencies of various types of plant—horizontals, verticals (light and heavy steaming), water gas (blue or carburetted), &c. They all have different efficiencies, and each has a range of efficiencies varying with the grades and qualities of coal and coke used and with the age and condition of the plant. It is suggested that manufacturers can give useful information on the efficiencies which can be expected.

If a complete schedule of these calculated efficiencies could be made by a reliable authority, similar to those published by Hardie in 1926, and grouped under several headings, a standard efficiency could be selected from the schedule as a yardstick to the actual working performance of any particular unit of gas-making plant in the country. Application of this yardstick would give what we want to know—*i.e.*, a measure of the efficient use made of the plant at his disposal by the engineer responsible. It would show where immediate improvements ought to be made, and would indicate where a scheme for modernization or integration would be justified.

As I understand it, this is one of the principles which have guided the activities of the recently formed Regional Gas Engineering Advisory Boards, but in the absence of any authoritative schedule of efficiencies the Boards have had to rely on approximation of their own.

Mr. Dixon's pronouncements are often provocative, and in his Paper he has given the Industry something to think about. Let us do justice to his efforts, and not only think about the standards he proposes but, in the national interest, strive to achieve them.

Dr. **J. G. King** (Director of the Gas Research Board): Mr. Dixon's Paper is a reminder, in times when fundamental changes loom ahead, that there is still much that can be done to improve the efficiency of the processes which we now have. In the first place, I like his appeal for that tidiness in works which comes from good planning, and always has its effect in stimulating manager and worker alike. For good planning one requires good training. We all realize that in the future the Industry is going to depend upon scientific processes of greater diversity which will require scientific methods of control. I feel, with Mr. Dixon, that something must be done now to educate our present operatives, and I also feel that we must attract to the Industry more chemical engineers. The educative system for our present operatives could be started on the lines now followed in respect of fuel efficiency by the Ministry of Fuel and Power, but the supply of chemical engineers for the future requires some thought as to the best method of expanding facilities for training. Prof. Townend is fully aware of this, and last year at this time he described his efforts in this direction. With him and Dr. Dixon I would like to see more facilities in this country for Degree Courses in chemical engineering. If these were available, all that would be required would be for the Industry to attract the graduates. Mr. Evans, at the end of his Address, said the possibilities for expansion are so great that we must expect to attract the best technical brains in the country.

Mr. Dixon has again called attention to the vexed question of coal quality. One must hope, with him, that when the conditions of peace return we will see a coal industry that will supply its products in reproducible grades under conditions which will ensure that each consuming industry will have the type and grade of coal which best suits its process. This simply must be brought about. I do not mean that first-class gas coal should be available to all—that would be prevented by transport costs—but there should be that continuity of quality which makes for efficiency of control. I should also like to see the Industry becoming more coal conscious. The war has taught us some lessons regarding the performance of hitherto unused types of coal. It has been found possible to manufacture reactive fuels for the mobile gas producer by careful selection of coal and conditions of carbonization. The same technique can lead to reactive cokes for domestic use which do not have that difficulty of ignition which has so long been a defect in gas cokes. I could refer you here to the experiments carried out by Mr. Jamieson and myself at Edinburgh.

If the sale of coke is not to remain a problem in the future, the Industry must help the spade work now being done by the Coke Associations with sizing standards, servicing, and technical advice by providing a higher grade product, higher particularly in respect of easy ignition (or fuel required for ignition) and flexibility in rate of burning.

Mr. Dixon refers to the fuel index in carbonization, and its possible use in comparing the performance of different plants. It is interesting to observe that in a recent survey the average efficiency over the whole country was 71.6%. It would be unwise to take this high figure as an index of overall efficiency, since so much depends on whether the products are equally marketable and upon the efficiency of their utilization. If one calculates, for example, that half of the tar is used as fuel, all the gas for domestic heating and all the coke on boilers, we arrive at an overall figure for efficiency in utilization of heat of 50%—still a remarkably high figure.

Mr. Dixon's Paper finishes on a good note which could be put into other words. Until reconstruction becomes possible, let us keep on stepping up the efficiency of our plant as a short term policy, and prepare ourselves by training, &c., for those drastic changes which reconstruction will surely bring.

Mr. **G. E. Currier** (Bradford): In his Paper Mr. Dixon has stated concisely the standards of technical performance which should be attained by every undertaking in the country, and I think it is safe to say that a large number of undertakings have for many years past conformed to many of the standards set out in this Paper. Wartime conditions have brought to light the fact, however, that there are a number of undertakings which fall far short of these standards of performance, and to many engineers in the Industry it has been an unpleasant surprise to learn of the serious extent of this deficiency.

The work carried out by the Committees of Enquiry of the Institution will to a large extent be nullified if their recommendations are not given practical effect by all undertakings, but if past experience is any guide it is probable that some undertakings will take no action towards implementing the various recommendations without compulsion being applied.

In his remarks on coke quality, Mr. Dixon asks the question, "Have all undertakings taken steps to put the recommendations into effect?" It would be even more interesting to know how many undertakings have put any of the recommendations into effect. The Author's suggestion that membership of District Coke Associations should be restricted to those guaranteeing their products regarding size and moisture is well worthy of serious consideration, One cannot resist stressing the fact that at the present time one aspect of coke quality over which undertakings have little or no control is the varying and increased quantity of ash in the coal supplied by many collieries.

As a member of the Committee of Enquiry which made the recommendations regarding sulphur removal, I can wholeheartedly support Mr. Dixon's suggestion that legislation should be introduced without delay in order to limit the sulphur content of gas in accordance with the recommendations of the Committee of Enquiry, and I would also suggest that existing legislation requires amendment to make it compulsory for an official independent gas examiner to be appointed for each gas undertaking in the country.

There is no doubt that a serious weakness in the Industry in the past has been the lack of a standardized costing system, in order to provide comparative statistical information, and it is to be hoped that this will be remedied in the near future.

The Author refers to Dr. E. W. Smith's question to the Industry in 1941, "What are we going to do about it?" and I can only repeat the statement I made in the contribution to last year's discussion, that it is a matter for regret that the Industry has not taken the opportunity to do far more towards its reconstruction and reorganization in the two years that have elapsed since Dr. E. W. Smith put his question to the Industry. Although since last year's meeting progress has undoubtedly been made, there is need for further speeding up by all sections of the Industry. Now Mr. Dixon asks, "What is the Gas Industry's standard of determination?"

In looking to the future one must consider the past and the present in order to achieve a higher and better standard in the future. A very serious fault in the Industry in the past and at the present time, and for which no satisfactory solution has yet been found, is the payment of inadequate salaries to competent technicians and administrators. Even though this problem remains unsolved and though it may in some cases act as a brake on initiative and incentive, it provides no excuse for an official failing to bring his undertaking up to the standards of technical performance set out in this Paper. Now is the time for each and every undertaking to set its house in order to the fullest possible extent, and not wait for the end of the war or the complete reconstruction and rationalization of the Industry.

Mr. **George Helps** (Nuneaton): I am sorry that so many of you disagree with me, because to-morrow you will agree; do not make any mistake about that. I want to emphasize the advantage of essential facts, but as I understand it, and judging from the treatment I have received, you want to suppress essential facts. Mr. Dixon refers to the high process thermal efficiency that enables the Gas Industry to claim recognition from those interested in the national economics of fuel conservation. I recently read in one of the trade journals that the gas-making process itself is one of high thermal efficiency. If you believe that, I am wasting my time in coming to speak to you. How on earth can a gas process which takes 35% of the coal and converts it into gas and converts the other 65% into coke, on which no profit is made, be a high thermal efficiency process? Parliament has more sense than that. In 1920 Parliament gave you an Act whereby you could supply gas to the public—and there are some 10 million households containing something like 30 millions of people—in such a way that they would have twice the gas for the same money, if you gasify the coal in the proper way. There is no doubt about that. Most of you are afraid to gasify coal completely because you will get a gas of lower calorific value, and you think it would not work. I have been using 200 B.Th.U. gas for something like 18 years, and it is astounding what you find. You can use a 200 B.Th.U. gas and obtain a gas flame mixture which is self-combustible at about three-tenths water pressure. Can you believe it? With your rich gas you do not entrain the air that is necessary for its combustion. You think you must produce a rich gas and have it in a small compass, but then people waste it, because they cannot use it all. You do not take the trouble to see what can be done. A great deal has been done with the bunsen burner, but I do not think any of you can produce at the moment a burner which will do what I tell you can be done.

GAS RESEARCH BOARD

THE 2nd Annual General Meeting of the Gas Research Board was held at Gas Industry House on June 10 under the Chairmanship of Mr. E. V. Evans, O.B.E. (Chairman of Council). Among those present was Professor Sir Lawrence Bragg, O.B.E., D.Sc., F.R.S., one of the representatives of the Department of Scientific and Industrial Research on the Council of the Board. Sir David Milne-Watson, D.L., M.A., LL.D., was re-elected President of the Board for the year 1943–44, and Mr. James Jamieson (Edinburgh) and Mr. J. F. Davies (Birmingham) were elected Vice-Presidents.

The Chairman, in the course of a statement to the meeting, said: The Report of the Council and the Accounts have been circulated to you, and I propose to move that they be taken as read, but before doing so I should like to comment upon some items in them.

Dealing first with the Accounts, you will observe that the most striking feature is the accumulation of a substantial balance. For a research organization this is not really a healthy state of affairs, because it means that we are doing less active work than our resources would permit. The reasons why that should be so are obvious, and during the past few years it would have been wrong to attempt to expand on any work which was not directly connected with the war effort. The situation is now changing, and there are many indications that we should increase the tempo of our research in order to prepare for the responsibilities of the Gas Industry in post-war reconstruction. In doing this our accumulated balance will be most valuable, and we shall also be able to put to good use the additional income we are receiving by way of Government grant.

While the financial assistance from the Department of Scientific and Industrial Research is a welcome assistance to our work, this has not been the sole reason for the Gas Research Board becoming officially associated with the Department. We wished also to obtain the enhanced status which this association brings, and particularly we wish to participate in the Standing Consultative Conference on fuel research which the Department is organizing. It is hoped by means of this Conference to bring about co-ordination of the research programme of those Research Associations dealing with matters pertaining to fuel, to see that there is no unnecessary overlapping, and to ensure that essential investigations are undertaken by the most appropriate organizations. The association with the Department also brings with it the privilege of having on our Council Professor Sir Lawrence Bragg, Cavendish Professor of Experimental Physics at Cambridge, and Professor C. G. Douglas, Professor of General Metabolism at Oxford, two eminent scientists whose experience and advice will be of great assistance.

During the year there have been two public announcements on fuel research that have received a considerable amount of notice in the press. I refer to the announcement by the British Coal Utilization Research Association of their intention to spend £200,000 a year for the next five years, and to the Report on Coal Utilization Research in Great Britain of the Parliamentary and Scientific Committee. It is a very welcome trend that so much more thought is being given to the proper and profitable use of the coal which forms the basis of Great Britain's economy. By the side of the large sums of money that have been mentioned in connexion with these two announcements, the income and expenditure account of the Gas Research Board may appear trivial, but I would point out that the expenditure of your Board does not by any means represent the total expenditure of the Gas Industry on research and development work. What this expenditure is we do not know precisely, but it is estimated that, during the years preceding the war, gas undertakings and gas plant and appliance manufacturers were between them spending about £400,000 a year on research and development work.

The creation of the Gas Research Board is in no way intended to supersede this vast amount of work which has been done by individual effort. Rather it is hoped that the fundamental investigations undertaken by the Board will lead to an increase of the development work carried out by the Industry itself. In fact, if this is not so, investigations of the Gas Research Board may well fail to be of full practical value.

Research into coal processing by carbonization and gasification and into the use of the resulting products has been in progress for many years, and there exists already a great deal of information which is not fully employed in practice. It is the duty of the Gas Research Board to see that this information, together with the new knowledge that the Board's own researches will produce, is made available to those capable of putting it to practical use. Beyond this point it becomes the responsibility of those exercising control over the operations of gas undertakings to see that the available information is applied in practice. While the Board does not consider that it can be directly responsible for such application (for this would constitute an interference with operational control that is not the function of a Research Association), it does desire to offer all possible encouragement to means whereby the application of scientific methods and knowledge is made speedier and more certain.

The scientific control of gas manufacture, distribution, and utilization requires that there shall be laboratory facilities and trained staff available to every undertaking. Present facilities are recognized as being inadequate, and there is good reason to expect that they will be extended and multiplied as soon as conditions permit. It is not a function of the Board to provide such laboratories and staff, because their work would in the main be related to servicing and development rather than to research. The establishment of a close liaison between such laboratories and the Gas Research Board is, however, most desirable, and it is expected that the Director will become and remain cognizant of the work in progress in all the Industry's laboratories. From them there will arise problems and new ideas, and the Board should be in a position to see that the problems are investigated adequately, and that the new ideas are given full opportunity for development.

On occasion it might become necessary that the Board should accept responsibility for special tests of processes or apparatus, or for the investigation of unusual occurrences, but it would be undesirable for any large proportion of its income to be diverted from true research work to investigations of this nature. Broadly, the position is that, through the work of its own staff, and by support of researches carried out in suitably chosen laboratories, the Gas Research Board should elucidate fundamental principles, whether these relate to coal processing or to the utilization of the products arising from coal processing. The application of these principles would be the work of service laboratories attached to gas undertakings or manufacturers of plant and appliances. Such a division of responsibility appears to be the most effective method of ensuring a progressively rising standard in the scientific utilization of coal, and would be the normal method of procedure. There may, however, be occasions when the needs of the Industry for a new process or new type of plant require that the Board itself should undertake work that is experimental and developmental rather than true research, and if such occasions arise the Board would not feel that there was reason for refraining from such work.

I do not propose at this meeting to review the course of investigations or programme of work, as these are described in the Annual Report of the Council, but I may say that there are many subjects of great importance under consideration for addition to our research programme, and our new Director, Dr. J. G. King, is at present reviewing an extensive list of such subjects with the object of advising the Council on the best means of engaging upon them as the opportunity offers.

We are pleased to have Dr. King with us at this meeting. We are fortunate and gratified at having been able to obtain his services. We are also pleased to have obtained, as Joint Assistant Director, Dr. F. J. Dent, Research Chemist of the Gas Research Board, who has carried out such outstanding investigations on the hydrogenation and gasification of coal.

In conclusion I wish to express our thanks to Dr. W. T. K. Braunholtz, who from the inception of the Board until now has carried out the duties of Acting Director as well as those of Secretary. His work in both capacities, which has had to be fitted in with his other duties as Secretary of The Institution of Gas Engineers, has been performed in a most praiseworthy manner, and the Board is deeply appreciative of the excellent work he has done. The thanks of the Council are due to the Council of The Institution of Gas Engineers for allowing Dr. Braunholtz to continue to serve as Secretary of the Gas Research Board, by which fortunate arrangement the closest contact between the two bodies is ensured.

The Director (Dr. King) also made a brief statement regarding the future work of the Board.

UNITED KINGDOM GAS CORPORATION

THE Eighth Ordinary General Meeting of the United Kingdom Gas Corporation, Ltd., was held on June 16 at Shell House, Bishopsgate, E.C. Mr. Bruce Ottley (Chairman of the Corporation) presided.

The Chairman said: I think the accounts now before you call for little comment from me. There was been a further expansion in revenue to £394,659, an increase of £32,564 over 1941. We have been able to write £12,494 off expenses of income in capital, against £7,541 in the previous year, and the carry-forward is slightly increased to £15,423. Such then is the condition of the Corporation's finances in this, the eighth year of its existence.

During this period upwards of £750,000 have been expended on the undertakings acquired apart from expenditure on new undertakings. The effect of the Corporation's policy of improvement, reconstruction, and development is shown by the substantial increase in the gross sales of gas to domestic, industrial, and commercial users, which in the aggregate are now almost double what they were prior to acquisition. Substantial as are the increases, they would, of course, have been far greater were it not for the rigorous policy of economy that has been, in compliance with the wishes of the Ministry of Fuel and Power, strenuously advocated among all our consumers.

The acquisition of undertakings prior to the war was undertaken with a definite plan in each area to provide a cheaper, more efficient, and higher standard of gas service. Twelve of the undertakings have been amalgamated, and no less than 30 have been grouped under unified management pending amalgamation the moment that circumstances permit. These amalgamations and groupings have resulted in substantial savings and improved services to the advantage of the gas consumers.

In Yorkshire operational grouping has been carried to its logical conclusion by the formation of the West Yorkshire Gas Distribution Company, of which we hold all the Ordinary share capital. This is the first statutory company formed for the integration of gas undertakings by collecting and distributing gas—from and to gas undertakings only—manufactured in coke ovens and in the most efficient gas-works. It will be recollected that this new and large development, which conveys gas to undertakings serving an area of over 500 square miles at higher pressure than has hitherto been used in this country, was strenuously opposed by many authorities, and as a result its service was originally confined to undertakings controlled by the Corporation.

A feature of this scheme of integration is that the coke oven companies supplying gas accept by agreement the normal statutory obligations imposed on undertakings as to maintenance, purity, and quality of gas supplied, and the closest co-operation in working is maintained between the management of the coke ovens, the Distribution Company, and the Corporation.

Heavy expenditure was incurred, but confidently incurred by your Board, who had unwavering faith in the great plan submitted to them by Colonel Carr and his staff of highly skilled engineers. A further substantial investment was made in connexion with this scheme whereby the Corporation acquired a 40% interest in the Hemsworth and United Kingdom Coke Oven Company, Ltd., and we are now concerned in its direction and management.

The scheme was brilliantly successful from the moment that it got under way. Indeed, the measure of its success may be gauged from the fact that many of those authorities who actively opposed us in Parliament figure now as staunch supporters, and two are taking, and others are ready to take, if and when in the wisdom of the Ministry they are so permitted, supplies of gas from the grid for their and *a fortiori* their consumers' great benefit. Development on these lines will continue in ever greater measure after the war, when the necessary materials are available, and if we are allowed to complete the comprehensive schemes we have in contemplation in the three main areas in which we operate.

A further unique feature of integration in the control of gas service is exemplified by the Radcliffe, Farnworth, and District Gas Company, where provision is made for the representation on the Board of the Company of the six local authorities which it serves. This arrangement has worked most successfully in the public interest. The practice of representation of local authorities on company boards was continued when the undertaking of the Morley Corporation was purchased. It has demonstrated the advantage to be derived from amalgamating direct public representation with virile private enterprise, and it is proposed to extend this policy as soon as circumstances permit to undertakings where local authorities have not been previously interested.

Much has been talked of post-war planning and the operation of monopolistic services as affecting the life of the population. I have, therefore, endeavoured to give you some information as to the progress made in sound planning co-ordinated for the benefit of the gas consumer, which has resulted from, and was made possible only by, the operation of a Corporation such as this.

I am of the opinion that the integration of the Industry can best be achieved by the utilization of operative holding companies under statutory control working in conjunction with local authorities, and linked up by distribution companies or boards on the lines this Corporation has initiated.

Finally, it may interest you to have a few facts to show what we have been able to do for the benefit of the war effort, and for our consumers. In our central organization our mutual aid repair squads have been able to render valuable first-aid assistance to such of our undertakings as have met with enemy damage—fortunately this number is small—and to other undertakings in the various areas where we are interested.

Our repair and contructional squads have effected great savings by enabling us to utilize and move plant from one works to another to meet abnormal demands. We have rendered, and are rendering, assistance to manufacturers in connexion with gas utilization, both in the provision of appliances and in securing the highest possible efficiency in operation.

The operation of our central administration has enabled economies in labour and materials to be effected such as is not possible to the independent undertaking, and we have continued to render administrative and technical assistance in every phase of operation.

I cannot close my speech without expressing to Colonel Carr and the staffs in London and Manchester, and throughout the whole of our subsidiary undertakings, our appreciation of another year's work carried our under conditions which have continued to be extremely difficult.

The Chairman then moved the adoption of the report and accounts.

Colonel W. Moncrieff Carr, O.B.E., T.D. (Managing Director), said: I second the resolution moved by the Chairman. Following upon his remarks as to the work of the Corporation's administration, I should like to refer to one matter contained in the Directors' report, and that is the alteration in the revenue account to show the total cost of the services rendered to the subsidiaries.

The war has proved the great value of our constructional and repair squads. We have not undertaken work, nor do we intend to carry out tasks that can be conveniently and economically placed to outside contract, but rather to carry out work which we can more satisfactorily handle by reason of its nature, or which involves the use of second-hand material and plant from other works, in addition to urgent and routine repairs. This work has not only resulted in considerable financial savings to our subsidiary companies, but has proved of inestimable advantage in saving materials and labour and in effecting rapid repairs of enemy damage.

The resolution was carried unanimously.

Company News

Drakes, Ltd., Halifax.—A trading profit of £26,021 was reported at the 41st annual meeting at Halifax on June 8. Dividends of 6% on the Cumulative Preference shares and 7½% on the Ordinary shares were declared, leaving a balance of £15,753 to be carried forward. Sympathetic reference was made to the untimely death of Mr. E. H. Payton, who had occupied the chair for only one year, and who had been succeeded by Mr. John A. Drake, great-grandson of the founder of the firm. The report stated that the purchase of the assets of John Morton & Co., Thornton, was completed during the year. The whole of the share capital of John Morton & Co. (Fireclay Thornton), Ltd., is held by Drakes, Ltd.

Meters, Ltd.—Final dividends of 2¾% on Preference stock (making 5½% for the year) and 6% on the Ordinary stock (making 10% for the year), less income-tax (the same as for the previous year), were declared at the 46th annual meeting at Manchester on June 8. Mr. Joseph Morley, Chairman and Managing Director, announced that the net profit was £23,870, and after providing for taxation reserve a balance of £8,539 would be carried forward. The subsidiary company had had a successful year and paid a good dividend. All branches continued to be fully employed, and thanks were due to the management, staff, and workpeople for their loyal co-operation and support in difficult times.

C. & W. Walker, Ltd.—Presiding at the 45th annual meeting on May 28, Mr. R. J. Milbourne said the net profit was £19,302, which, although a little less than for the previous year, was satisfactory. A large percentage of the Company's output was occupied in helping to meet Government needs, but they had been able to carry out a number of important and pressing contracts in connexion with the design, manufacture, and construction of gasholders and other ancillary plant required in the manufacture and distribution of gas and the necessary chemical plant for the extraction of residual products. After the war they looked forward to increasing their important business with the Gas Industry and re-establishing their normal peacetime activities. Since the last meeting the Directors had purchased the freehold of the works site, together with certain buildings included in the lease, and thus strengthened their financial position. Dividends were declared at the rate of 7½% on Preference shares, 10% on Ordinary shares, less income-tax, together with a bonus of 1s. per share on Ordinary shares, leaving £15,276 to be carried forward after provision for N.D.C. and income-tax.

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GAS PRODUCTS PRICES—STOCKS AND SHARES

The London Market June 21.

All Coal Tar Products are in good demand, and Pitch in the London area remains about 45s.

Attention is called to a new Government Order which has just been issued, the Control of Coal Tar Naphtha and Xylole Order, 1943 (S. R. & O. 1943, No. 768).

This new Order differs from the old 1942 Order mainly in the fact that it embraces the supply of these commodities in very small quantities.

Apart from this there is nothing of interest to report.

The Provinces June 21.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 1s. 10d., pure, 2s. 5d. (controlled by the Control of Toluene No. 2 Order, July 3, 1941, which fixes the maximum price at which this material may be sold). Naphtha and Xylole controlled by the Coal Tar Naphtha and Xylole Order, 1943, dated May 31 (S. R. & O., 1943, No. 768), operative from June 1. Carbolic acid, 60's, naphthalene, and anthracene controlled by the Coal Tar Products Prices Order S. R. & O. 2509, dated Dec. 7, 1942, and operative from Jan. 1, 1943. Filtered heavy oil (min. gr. 1,080), 7¼d. to 8d. Creosote oil has been generally controlled as to direction and price for some time past. Current value—fuel grades 5d. to 5¼d.; timber preservation and other purposes 4¾d. to 6d.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Tar Products in Scotland June 19.

No material alterations can be recorded. Refined tar controlled. Value is 4½d. per gallon ex Works, naked. Creosote oil: Specification oil, 6½d. to 7d.; low gravity, 7¼d. to 7½d.; neutral oil, 6d. to 6½d.; hydrogenation oil, 5⅞d. per gallon; all *ex* Works in bulk. Refined cresylic acid is in good call at 3s. 6d. to 4s. 6d. per gallon *ex* Works; naked, according to quality. Crude naphtha, 6½d. to 7d. per gallon. Solvent naphtha: Basic prices delivered in bulk 90/180 grade 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 3d. per gallon. Pyridine: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

Stock markets opened quietly last week, but towards the close prices showed an upward tendency. Gilt-edged stocks generally were higher, and some leading industrials and South African gold and diamond shares also closed higher.

There was no increase in the volume of business in gas stocks and shares, and although prices remained well maintained there were no special features. Several small gains were recorded among "ordinaries," and it is satisfactory to note that Oriental stock made a further advance. It will be seen that a number of fixed-interest stocks were marked *x.d.* on June 15.

There is a fairly wide range of gas debenture stocks on offer yielding from about 3½% to 4½%, including £25,000 Gas Light 3%, but the "ordinary" list is very limited. Among preference stocks £2,000 Wandsworth 4% is available at 96 to yield £4 3s. 4d.%.

The following price changes took place during the week:

SUPPLEMENTARY LIST

Brighton 5 p.c. Deb. (*x.d.*) ...	...	122—127	June 15
Cheltenham 4 p.c. Deb. (*x.d.*)	...	102—107	,,
Gas Consolidation "A" ...	...	16/6—18/6	+-/6d.
Slough 5 p.c. Deb. (*x.d.*) ...	...	120—125	June 15
Uxbridge 5 p.c. Deb. (*x.d.*) ...	...	121—126	,,

PROVINCIAL EXCHANGES

Newcastle Units		23/3—23/9	—-/3d.
Ditto 4 p.c. Pref.		98—100	+1
Sheffield Ord.		130—133	+1

OFFICIAL LIST

Bombay (*x.d.*)		22/6—24/6	June 15
Bournemouth 4 p.c. Deb. (*x.d.*) ..		105—110	,,
Brighton Cons.		84—89	+1
British 4 p.c. Red. Deb. (*x.d.*) ..		92—97	June 15
Colombo 7 p.c. Pref. (*x.d.*) ...		21/—23/-	,,
East Surrey "B"		87—92	+2
Imperial Continental Ord.		84—87	+1
Oriental		110—115	+2
Plymouth & Stonehouse Ord. (*x.d.*)		90—95	June 15
Primitiva Holdings 6 p.c. Red. Cum. Pref. (*x.d.*)		99—104	,,
Severn Valley 4½ p.c. Cum. Pref. ...		19/6—20/6	+-/6d.
South-Eastern Gas Corporation Ord. (*x.d.*)		19/—20/-	June 15
Ditto 4½ p.c. Red. Cum. Pref. ...		19/6—20/6	+-/6d.
South Metropolitan Ord.		81½—84½	+1½
South Suburban 5 p.c. Deb. (*x.d.*) ...		122—127	June 15
Wandsworth 5 p.c. Deb. (*x.d.*) ..		122—127	,,
Ditto 4 p.c. Deb. (*x.d.*)		101—106	,,

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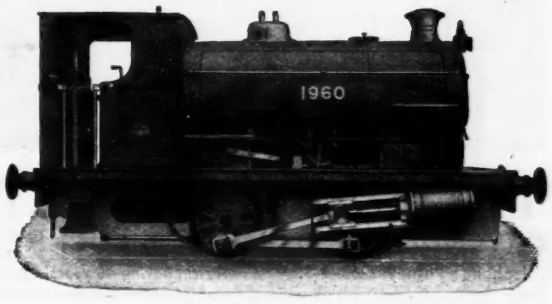

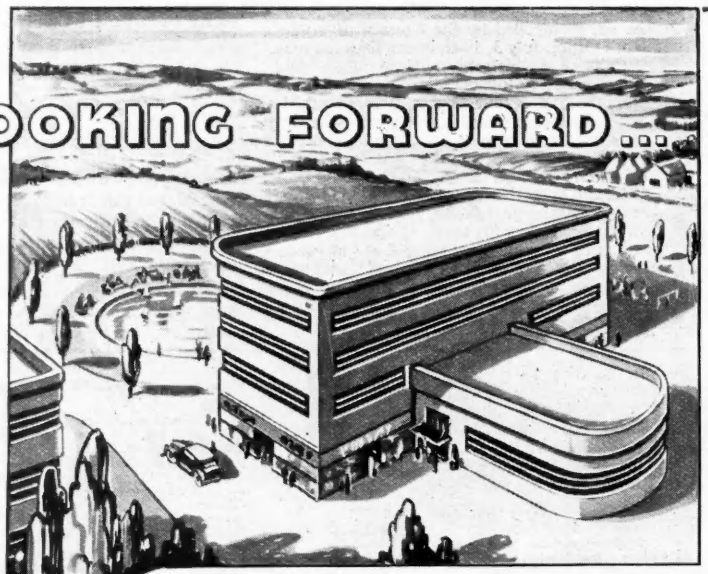

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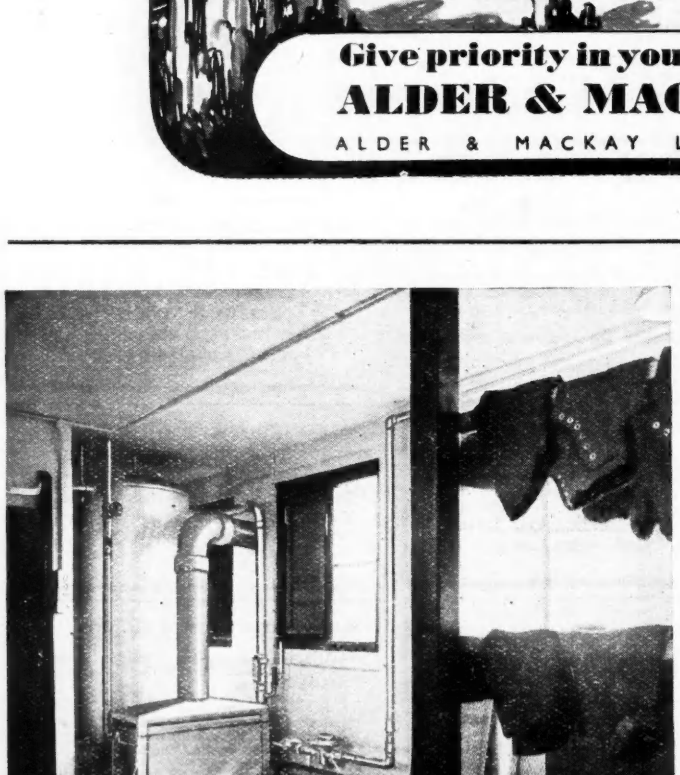

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GAS JOURNAL, JUNE 30, 1943

VOL. 241 95th YEAR No. 4180

EDITORIAL NOTES

RESEARCH ORGANIZATION

THE Chairman of the Gas Research Board, Mr. E. V. Evans, in his statement at the annual meeting of the Board (see last week's "JOURNAL," p. 772) made it clear that while the financial assistance from the Department of Scientific and Industrial Research is, of course, a welcome help, this has not been the sole reason for the Board's becoming officially associated with the Department. The Gas Industry also desired to obtain the enhanced status which this association brings in its train, and particularly did it wish to participate in the Standing Consultative Conference on fuel research which the Department is organizing. We have previously referred to this Co-ordinating Committee under the Chairmanship of Sir Harold Hartley, which seems to us an admirable practical means of giving agreed definition to the fields of work of all the State-aided fuel research associations, including electricity, refractories, coal, gas, and the Fuel Research Board itself. It is an excellent plan designed to avoid overlapping, foster co-operation, and channel effort in those directions likely to be most productive. We regard it as a most happy feature that the establishment of the Gas Research Board as a State-aided association, and the appointment of Dr. J. G. King as Director of the Board, should come at a time of unification, as it were, of the resources and work of the several associations dealing with research appertaining to fuel in its various forms. To the appointment of Dr. King we have also previously referred. The Gas Industry, we think, is very fortunate in the appointment in this capacity of one who has long and intimate knowledge of the art and practice of a Government research body. We are sure that this knowledge will prove invaluable, and we are equally sure that the Industry, eager to have its research work organized to the best advantage, will be keen to give full support to Dr. King's direction and suggestions.

We know that the Director of the Gas Research Board lacks neither ideas nor plans, and we know that he shares our view that the value of research work cannot be measured by the amount of money available for research ; what matters is that the money should be expended wisely, and that research should not be engaged upon for its own sake or for the glorification of a research department. For many years the Gas Industry has carried out quite a large amount of research and investigation, and it is estimated that during the years preceding the war gas undertakings and gas plant and appliance manufacturers were spending—we would emphasize that this is only an estimate —about £400,000 a year on research and development work. Whatever the amount, there is a great deal to be done in knitting this research more closely together, and in taking steps to see that it is applied in practice. This apart from new attacks on fresh subjects. Hence we like Dr. King's intention to set up within the Board an Intelligence Section adequately staffed—a section to collate and disseminate information relevant to the Industry's research; in other words an information bureau constantly in action for consultation. We can visualize the benefits to be derived if each fuel research association has similar arrangements for the purpose, and all contribute their specialized information to a Central Intelligence Bureau linking up the entire group, and enabling each constituent member to draw freely from the common fund of knowledge. Properly organized such a system should ensure, with freedom from overlapping, maximum result from minimum toil.

The aim of Dr. King (he has himself made this clear to us) is to tackle only research problems on the laboratory and intermediate scale in the Board's own laboratory—which means that the Board should have a laboratory. The setting-up of semi-scale or full-scale plant for the purpose of investigation is not contemplated. Work on such a scale can best be undertaken at a gas-works, the Board collaborating, of course, in the work and directing it. The point is that the creation of the Gas Research Board is in no way intended to supersede the large amount of work which has been and is being done by individual effort. Rather it is hoped that the fundamental investigations undertaken by the Board will lead to an increase of the development work carried out by the Industry itself. The success of the Board's activities will depend on active and wholehearted co-operation. Co-operation will be the mainspring of Dr. King's endeavours, and to make this co-operation effective the Board should have appropriate headquarters.

At the moment the new Director has his headquarters at Gas Industry House—obviously, in view of his aims, an unsuitable arrangement which, we hope, can only be regarded as a temporary expedient. From the point of view of the work of the Board and of the prestige of the Gas Industry, it is desirable that steps should be taken to establish adequate premises where staff can be housed, with laboratory and library facilities. Plans, we suggest, should be drawn up for accommodation of the nature, and though it may not be thought fitting, or, indeed, may be impossible, to start building, we suggest that a move could at least be made for the acquisition of an appropriate site for future development. We have in this note merely indicated a few of the aims of the new Director; we think they are aims which call for the Industry's full backing.

That such backing will be forthcoming seems evident from the remarks made by speakers at a meeting of the Midland Association which we attended in Birmingham last Thursday, when Dr. King addressed the members on "Research and the Gas Industry." The Address, which we publish in our issue to-day, "went down" extraordinarily well, as its merit deserved. Dr. King gave a clear outline of his plan of campaign and his method of approach to the matter, concluding his remarks by saying that only by complete accord between the Industry and its research groups will it be possible to achieve the best results. We are optimistic enough to believe there will be this accord. The breadth and scope of the field to be covered were indicated in the Address. Certain subjects of grave importance to the Gas Industry are not yet covered by research associations; and in this regard Dr. King expressed the hope that those concerned with coke and tar would act in liaison with the Gas Research Board, so that their researches where desirable could be taken care of under the auspices of the Board. The problems concerned in the manufacture of coke are of common moment to the Gas Industry and other coke interests, and we can visualize the advantages of combined attack on problems. Similarly, tars present some problems which could be studied advantageously by one group. Besides outlining a plan of campaign, Dr. King dealt in small compass with lines of research—a brief survey which we found most stimulating and encouraging, an impression which, we think, will be shared by all who study the Address.

B.C.U.R.A.; B.C.I.R.A.

THE foregoing note has been concerned largely with the provision of accommodation for the Gas Research Board, not, say, twenty years hence, but now. In our view, the merit of research is not to be measured by the number of square feet of laboratory accommodation available; there should be an excess of ideas over income; and we want genuine co-operation among the several fuel research associations. The notion of one research association vying with another on the output of research communications or the number of white-coated assistants employed does not appeal to us in the least. On the other hand, we think there ought to be sensible equipment and facilities at the disposal of research workers. Responsible scientists view with concern exaggerated claims, and just as a scientist cannot be made in a day, though he might be born in one, so we have to bear in mind the inevitable time-lag in research and organize accordingly. And it is with co-operation, not competition, in our mind that we take a look at what the other fellow is doing, "fellow" being "one associated with another" (C.O.D.).

The day before the Birmingham meeting of the Midland Association we attended the opening of new laboratories for physico-chemical research at the British Coal Utilization's premises at Coombe Springs, Kingston, a highly salubrious spot. They were opened by Sir Edward Appleton, Secretary of the D.S.I.R., who suggested that the steps recently taken by B.C.U.R.A. were some of the first notable signs of a great forward movement in industrial research which he confidently expected would be one of the features of post-war Britain. This constitutes very considerable praise. Sir Evan Williams, referring to finance, mentioned the creation this year of the £1,000,000 fund for the five-year plan of B.C.U.R.A., adding that when the Association felt it required more money, more money would be forthcoming. Now the Kingston Laboratories are only a temporary measure, but they are really quite commodious and are well equipped. We were much impressed with the research facilities they afford, facilities which should stimulate and encourage those engaged in the work in them. Looking ahead, however, the Association has acquired a site of 20 acres at Leatherhead, and it is there that the permanent research station will be erected after the war. Perhaps the final building will be something of a show-piece; we think, at any rate, that it will be undertaken in no spirit of half-measures. In the meantime Sir Evan Williams assured those present at Kingston last Wednesday that the Association in its temporary abode was going ahead to give the people of this country what they wanted —coal fires and cooking and hot-water appliances, an obvious demand (in the Association's view) shown by a recent investigation by Mass Observation. Also in the meantime the Director of the Gas Research Board has a small office at Gas Industry House; centrally situated, it is true, but hardly calculated to fire the imagination or to create inspiration. We trust that even a state ot world war will not hinder the Gas Industry, where it has not hindered others, in the immediate formulation of plans and the putting of them into effect at the earliest possible date. Clearly we have leeway to make up.

From B.C.U.R.A. we turn to the British Cast Iron Research Association, and contemplate what it effected a month ago. May 28 last saw the opening of the Association's laboratories at Bordesley Hall, twelve miles outside Birmingham. We have not actually visited these premises, but we have heard a good deal about them and have seen many photographs. The grounds of Bordesley Hall cover 15 acres, and we understand that visitors there are apt to show considerable interest in the gardens as well as in the research carried out in their midst. The buildings and grounds, we would mention, represent a capital investment exceeding £11,000. An additional £5,000–6,000 on equipment has been authorized by the Council, and further additions to this are contemplated in order to enable the Association to play its part in assisting the industry to meet post-war problems. There is a library and there is an information bureau. Total expenditure is estimated to work out at about £25,000. We repeat that in our opinion the value of research is not to be measured in the number of square feet of laboratory accommodation or the acreage of delightful grounds and gardens; but the examples we have quoted of B.C.U.R.A. and B.C.I.R.A. are there for not only the Gas Industry, but for all the world to see.

Personal

On medical advice, Mr. A. MACKAY, M.I.Mech. E., is resigning as Chief Engineer and General Manager of the Stoke-on-Trent Gas Department with effect from the end of September.

Mr. Mackay's early technical training was with the Glasgow Corporation Gas Department, and for seven years he was Assistant Engineer at the Dawsholm Works. Subsequently he was Engineer and Manager successively at Montrose and Motherwell. When he went to Stoke in 1917 there were four separate works owned by the Corporation, while the central part of the district was supplied from a works owned by a company. Mr. Mackay planned a complete scheme for acquiring the company's works, erecting plant more than to double the capacity of those works, with the necessary distribution system; and closing down the four old works of the Corporation, and one of the company's works situated at Tunstall. This was the first gas centralization scheme attempted on such a scale, and it resulted in drastic reductions in the price of gas, with especial repercussions on the industrial load, particularly in pottery firing. Up to the outbreak of war the increase in industrial usage had amounted to 442%. In spite of all difficulties, the low rates for gas prevailing before the war have remained unchanged.

* * *

Mr. JOHN E. STANIER, G.M., M.I.Chem.E., present Deputy Gas Engineer, has been appointed to succeed Mr. Mackay as Chief Engineer and General Manager. Mr. Stanier joined the Department nine years ago as Assistant Engineer, being promoted a year later to the position of Deputy Engineer. Prior to going to Stoke he was with the Stockport Gas Department for 15 years.

* * *

Mr. L. A. THORMAN has been appointed Regional Gas Officer at Nottingham to the Ministry of Fuel and Power. He will work in close collaboration with Mr. George Dixon, the Regional Gas Advisory Officer.

* * *

Mr. J. F. RUST, Engineer to the Newport (Mon.) Gas Company, has been appointed a Director of the Ross Gas Company, Ltd.

Obituary

With great regret we record the death earlier this month of Mrs. TARRATT, wife of Mr. Frank P. Tarratt, formerly of Newcastle upon Tyne. By her happy disposition and unfailing sense of humour Mrs. Tarratt endeared herself to many in the Industry, especially during her husband's Presidency, in 1933–34, of The Institution of Gas Engineers.

* * *

The death has occurred at Inverness of Mr. ANDREW THOMSON in his 66th year. He had been Engineer and Manager of the Inverness Corporation Gas Department since 1903, in which year he succeeded his father, who had been Manager since 1875. Mr. Thomson is survived by three sons and a daughter.

Letters to the Editor

Sulphur—What are We Going to Do About It?

DEAR SIR,—I have read your Editorial Notes in your issue of June 23 with great interest. There are times when plain speech is required, and this is one of them, yet I feel that the castigation of the Industry administered on this account is not warranted. It is no use flogging a willing horse, and there are a few, even in the Gas Industry.

I consider that many, if not all, gas engineers think "Sulphur must go," but, unfortunately, sulphur will not obligingly disappear when it learns that it has overstayed its welcome! It has to be extracted and rejected. The problem is, How?

Extended oil washing for benzole, or benzole extraction by the activated carbon process, will remove the sulphur down to 9 grains or so per 100 cu.ft.; but this, I consider, is only a minor improvement. Much more drastic removal is necessary if there is to be an important improvement in the products of combustion. I think that the goal is one grain or less.

To quote your notes, "Every chemist outside the Industry knows that the technical difficulties in its removal do not exist." Apparently every chemist or, at any rate, every engineer inside the Industry considers that they do and are most formidable. If this is not the case, then there is something seriously wrong in the Industry's information service. So far as I am aware, there is only one plant working on sulphur extraction of this order, and little, if any, information has been disclosed. If this plant is only yet in the development stage

then the Industry cannot be blamed for not installing similar units on a large scale. If, on the other hand, the plant has passed beyond this stage, why should we not have been told about it? Surely it is somebody's job to keep the Industry informed on major developments. Perhaps you, Sir, can help in this direction.

Recently I had the pleasure of attending a meeting of the Midland Association of Gas Engineers to hear Dr. King, the Director of Gas Research. At that meeting I made the suggestion that local research associations or committees be set up for the purpose of—

1. Maintaining the closest liaison between districts and the Research Board and to stimulate and maintain interest in research and the progress made.
2. Advising the Research Board of suitable works where experimental plants might be tried out. (It would be preferable that new types of plant which it is desired to encourage should be tested in various well separated areas, so that they could readily be inspected, and information as to performance would spread rapidly.)
3. To assist the Research Board in accelerating the translation of research into practice.

It may be that existing bodies such as the Regional Gas Engineering Advisory Boards would be best equipped to carry out this duty. I am concerned not so much as to who does it, as that it should be done. The days when research was something we discussed once a year are gone.

The Cheltenham and District Gas Company.
June 26, 1943.

Yours faithfully,
CHARLES R. INGHAM.

Co-partnership

DEAR SIR,—The statements made by "Futurist" in your issue of May 26 appear to be so extravagant that it is not easy to believe that his views have been derived from personal experience. My own association with the pioneers of co-partnership in the Gas Industry ranges over a period of 41 years; and your readers may judge whether the co-partnership rewards in this undertaking (South Metropolitan Gas Company) "are not sufficiently tangible," or "not immediately evident." In passing, it may interest "Futurist" to know that the writer has had a seat on this Company's Board as an Employees' Director (Staff Section) for upwards of 13 years, and that two of his colleagues thereon are also Employees' Directors, representing the weekly and hourly rated employees. A number of other co-partnership undertakings provide for their employees to be similarly represented—*e.g.*, South Suburban and Commercial. For this, of course, sanction is required from both the shareholders and the Board of Trade.

Our profit-sharing scheme was inaugurated in 1889, and developed into co-partnership five years later—two widely different propositions. The following is a synopsis of our profit sharing and co-partnership figures since the year mentioned:

Bonus credited to Employees' Accounts	£1,815,300
Voluntary savings " "	1,138,800
Interest on savings and bonus	244,200
	£3,198,300
Bonus and savings voluntarily transferred from the Cash (or Withdrawable) Account for the purchase of Ordinary Stock in the Company	£640,100
Total of bonus and savings invested in such Stock	£1,555,100

The value of Ordinary Stock held by co-partners, together with the amounts standing to the credit of their co-partnership accounts on the outbreak of war, was £762,300. Since then the comparatively small amount of £1,700 has been realized by co-partners from the sale of stock, the reasons for the sales largely being due to circumstances of a special character arising out of the war.

The Co-partnership Committee of Management administers the Company's Co-partnership, Pensions, Accident, and Insurance Funds, the Company having contracted out of the Workmen's Compensation and National Health Insurance Acts. Such a parent Committee is an integral part of our co-partnership. It not only performs exceedingly useful functions in its administrative, consultative, and representative capacity, but acts as a safety valve to the employees, and makes for better understanding between employer and employee. (There has been no repetition of our employees' costly strike in 1889.) And yet "Futurist" informs us that "The value of co-partnership as an incentive is NIL."

It is difficult to understand how "piece-rate systems ousted co-partnership in many industries," because, if such systems increased the earnings of employees, the corollary would be that the profits of the undertaking concerned would be also increased. On what grounds does "Futurist" presume "that piece-rate systems make up for the lack of incentive in co-partnership?" It is a bold statement to affirm, and unfortunate if, where he has been employed, his experience has been the exception to the rule.

Co-partnership benefits are invariably based on the signing of service agreements. If, therefore, an employee has thereby accepted the conditions of co-partnership (a primary object of which is the acquiring of stock in the undertaking by the employees), can there be any valid reason for objection by an employee for not being permitted to withdraw bonus with impunity from his co-partnership account? On the other hand, withdrawals are allowed in times of difficulty, and for house purchase, marriage, and other reasons. There is no obligation for an employee to sign a service agreement, and thus embrace co-partnership, but they all seem to like to do so; and it should be emphasized that the allocation of bonus is made from surplus profits, and is additional to the scheduled rates of wages. How, then, can the recipient complain of the conditions to which he has become a party? But there is something far more important than to be able to supplement wages through bonus withdrawals, namely, to have a "nest egg" for a rainy day. Many of our pensioners who, when they were *labourers*, were encouraged not to withdraw their bonus, and who took advantage of saving facilities, now own their own houses and plots of ground, have money invested, and are happy and contented citizens. Should death overtake the husband first, has not co-partnership, plus thrift, been worth while if the widow experiences some sense of independence? I do not know of any "compulsory method of co-partnership," and I am not aware that many co-partnership schemes subsidize pensions funds. In my Company the bonus allocations are credited in equal proportion to the cash and stock accounts. Bonus cannot be withdrawn from the latter account except for stock purchase. For this, opportunity is normally afforded annually when co-partners can purchase stock by using the money on the stock accounts, by transferring sums from the cash accounts, and by adding dividends and savings. (Some co-partnership undertakings permit withdrawals from their withdrawal cash accounts without let or hindrance.)

I would say that co-partnership helps a man to become a better citizen, enables him to earn a stake in the undertaking he serves, and assists him to face what, in these days, is a very uncertain future. Of all the mundane benefits accruing from co-partnership the most important to the individual is security of employment; then there are the Committee of Management, the Employees' Directors, and the bonus allocations. Co-partnership, interpreted aright, is brotherhood in business, and that is the greatest factor of all. Co-partnership seeks to give rather than to receive.

South Metropolitan Gas Company,
June 24, 1943.

Yours truly,
V. HEWES,
Co-partnership Secretary.

New Laboratories of B.C.U.R.A.

On June 23 new laboratories for physico-chemical research were opened by Sir Edward Appleton, Secretary of the Department of Scientific Research, at the British Coal Utilization Research Association's premises at Coombe Springs, Coombe Lane, Kingston. These laboratories, quite extensive and well equipped, are a temporary measure, for the Association has acquired a site of 20 acres at Leatherhead, where a permanent research station is to be erected after the war.

Sir Evan Williams, who presided, said the laboratories had been erected to replace those at Fulham destroyed by enemy action. The Association could scarcely have grown to its present stature had it not been for the keen interest, the patient advice, and the financial assistance given from its inception by the Department of Scientific and Industrial Research. One of the problems of research, he added, was to give the people of the country the coal fires and the cooking and hot-water appliances they wanted, but to make them thoroughly efficient, highly economical, convenient, simple to operate, clean, and practically smokeless. He thought the problem had been solved. Great progress had been made with the practical development of producer gas as an alternative fuel for road transport. The producer itself had been brought to the stage where it gave highly satisfactory and competitive results under strict tests and operative conditions on the road, and in activated coke he thought there had been found the fuel of the future for road transport. The Association was inviting the mineworkers to appoint members to its Council.

Sir Edward Appleton, in opening the laboratories, said the steps recently taken by the Association were some of the first notable signs of a great forward movement in industrial research, which he confidently expected would be one of the features of post-war Britain.

Mr. Will Lawther, President of the Mineworkers' Federation, said he believed that the coal industry could be developed to an extent never known before.

The Institution of Gas Engineers

Dr. W. E. LE B. DIAMOND, M.A., A.I.C., F.C.I.S., who has been Assistant Secretary of The Institution of Gas Engineers since 1937, has been appointed General Manager of the British Plastics Federation.

Diary

July 6.—B.C.G.A. Full Executive Committee at Gas Industry House, 2 p.m.
July 19.—London and Counties' Coke Association Committees: Finance, 11 a.m.; Executive, 11.30; Central, 2 p.m.

Mr. **George Helps** (Nuneaton): I am sorry that so many of you disagree with me, because to-morrow you will agree; do not make any mistake about that. I want to emphasize the advantage of essential facts, but as I understand it, and judging from the treatment I have received, you want to suppress essential facts. Mr. Dixon refers to the high process thermal efficiency that enables the Gas Industry to claim recognition from those interested in the national economics of fuel conservation. I recently read in one of the trade journals that the gas-making process itself is one of high thermal efficiency. If you believe that, I am wasting my time in coming to speak to you. How on earth can a gas process which takes 35% of the coal and converts it into gas and converts the other 65% into coke, on which no profit is made, be a high thermal efficiency process? Parliament has more sense than that. In 1920 Parliament gave you an Act whereby you could supply gas to the public—and there are some 10 million households containing something like 30 millions of people—in such a way that they would have twice the gas for the same money, if you gasify the coal in the proper way. There is no doubt about that. Most of you are afraid to gasify coal completely because you will get a gas of lower calorific value, and you think it would not work. I have been using 200 B.Th.U. gas for something like 18 years, and it is astounding what you find. You can use a 200 B.Th.U. gas and obtain a gas flame mixture which is self-combustible at about three-tenths water pressure. Can you believe it? With your rich gas you do not entrain the air that is necessary for its combustion. You think you must produce a rich gas and have it in a small compass, but then people waste it, because they cannot use it all. You do not take the trouble to see what can be done. A great deal has been done with the bunsen burner, but I do not think any of you can produce at the moment a burner which will do what I tell you can be done.

GAS RESEARCH BOARD

THE 2nd Annual General Meeting of the Gas Research Board was held at Gas Industry House on June 10 under the Chairmanship of Mr. E. V. Evans, O.B.E. (Chairman of Council). Among those present was Professor Sir Lawrence Bragg, O.B.E., D.Sc., F.R.S., one of the representatives of the Department of Scientific and Industrial Research on the Council of the Board. Sir David Milne-Watson, D.L., M.A., LL.D., was re-elected President of the Board for the year 1943–44, and Mr. James Jamieson (Edinburgh) and Mr. J. F. Davies (Birmingham) were elected Vice-Presidents.

The Chairman, in the course of a statement to the meeting, said: The Report of the Council and the Accounts have been circulated to you, and I propose to move that they be taken as read, but before doing so I should like to comment upon some items in them.

Dealing first with the Accounts, you will observe that the most striking feature is the accumulation of a substantial balance. For a research organization this is not really a healthy state of affairs, because it means that we are doing less active work than our resources would permit. The reasons why that should be so are obvious, and during the past few years it would have been wrong to attempt to expand on any work which was not directly connected with the war effort. The situation is now changing, and there are many indications that we should increase the tempo of our research in order to prepare for the responsibilities of the Gas Industry in post-war reconstruction. In doing this our accumulated balance will be most valuable, and we shall also be able to put to good use the additional income we are receiving by way of Government grant.

While the financial assistance from the Department of Scientific and Industrial Research is a welcome assistance to our work, this has not been the sole reason for the Gas Research Board becoming officially associated with the Department. We wished also to obtain the enhanced status which this association brings, and particularly we wish to participate in the Standing Consultative Conference on fuel research which the Department is organizing. It is hoped by means of this Conference to bring about co-ordination of the research programme of those Research Associations dealing with matters pertaining to fuel, to see that there is no unnecessary overlapping, and to ensure that essential investigations are undertaken by the most appropriate organizations. The association with the Department also brings with it the privilege of having on our Council Professor Sir Lawrence Bragg, Cavendish Professor of Experimental Physics at Cambridge, and Professor C. G. Douglas, Professor of General Metabolism at Oxford, two eminent scientists whose experience and advice will be of great assistance.

During the year there have been two public announcements on fuel research that have received a considerable amount of notice in the press. I refer to the announcement by the British Coal Utilization Research Association of their intention to spend £200,000 a year for the next five years, and to the Report on Coal Utilization Research in Great Britain of the Parliamentary and Scientific Committee. It is a very welcome trend that so much more thought is being given to the proper and profitable use of the coal which forms the basis of Great Britain's economy. By the side of the large sums of money that have been mentioned in connexion with these two announcements, the income and expenditure account of the Gas Research Board may appear trivial, but I would point out that the expenditure of your Board does not by any means represent the total expenditure of the Gas Industry on research and development work. What this expenditure is we do not know precisely, but it is estimated that, during the years preceding the war, gas undertakings and gas plant and appliance manufacturers were between them spending about £400,000 a year on research and development work.

The creation of the Gas Research Board is in no way intended to supersede this vast amount of work which has been done by individual effort. Rather it is hoped that the fundamental investigations undertaken by the Board will lead to an increase of the development work carried out by the Industry itself. In fact, if this is not so, investigations of the Gas Research Board may well fail to be of full practical value.

Research into coal processing by carbonization and gasification and into the use of the resulting products has been in progress for many years, and there exists already a great deal of information which is not fully employed in practice. It is the duty of the Gas Research Board to see that this information, together with the new knowledge that the Board's own researches will produce, is made available to those capable of putting it to practical use. Beyond this point it becomes the responsibility of those exercising control over the operations of gas undertakings to see that the available information is applied in practice. While the Board does not consider that it can be directly responsible for such application (for this would constitute an interference with operational control that is not the function of a Research Association), it does desire to offer all possible encouragement to means whereby the application of scientific methods and knowledge is made speedier and more certain.

The scientific control of gas manufacture, distribution, and utilization requires that there shall be laboratory facilities and trained staff available to every undertaking. Present facilities are recognized as being inadequate, and there is good reason to expect that they will be extended and multiplied as soon as conditions permit. It is not a function of the Board to provide such laboratories and staff, because their work would in the main be related to servicing and development rather than to research. The establishment of a close liaison between such laboratories and the Gas Research Board is, however, most desirable, and it is expected that the Director will become and remain cognizant of the work in progress in all the Industry's laboratories. From them there will arise problems and new ideas, and the Board should be in a position to see that the problems are investigated adequately, and that the new ideas are given full opportunity for development.

On occasion it might become necessary that the Board should accept responsibility for special tests of processes or apparatus, or for the investigation of unusual occurrences, but it would be undesirable for any large proportion of its income to be diverted from true research work to investigations of this nature. Broadly, the position is that, through the work of its own staff, and by support of researches carried out in suitably chosen laboratories, the Gas Research Board should elucidate fundamental principles, whether these relate to coal processing or to the utilization of the products arising from coal processing. The application of these principles would be the work of service laboratories attached to gas undertakings or manufacturers of plant and appliances. Such a division of responsibility appears to be the most effective method of ensuring a progressively rising standard in the scientific utilization of coal, and would be the normal method of procedure. There may, however, be occasions when the needs of the Industry for a new process or new type of plant require that the Board itself should undertake work that is experimental and developmental rather than true research, and if such occasions arise the Board would not feel that there was reason for refraining from such work.

I do not propose at this meeting to review the course of investigations or programme of work, as these are described in the Annual Report of the Council, but I may say that there are many subjects of great importance under consideration for addition to our research programme, and our new Director, Dr. J. G. King, is at present reviewing an extensive list of such subjects with the object of advising the Council on the best means of engaging upon them as the opportunity offers.

We are pleased to have Dr. King with us at this meeting. We are fortunate and gratified at having been able to obtain his services. We are also pleased to have obtained, as Joint Assistant Director, Dr. F. J. Dent, Research Chemist of the Gas Research Board, who has carried out such outstanding investigations on the hydrogenation and gasification of coal.

In conclusion I wish to express our thanks to Dr. W. T. K. Braunholtz, who from the inception of the Board until now has carried out the duties of Acting Director as well as those of Secretary. His work in both capacities, which has had to be fitted in with his other duties as Secretary of The Institution of Gas Engineers, has been performed in a most praiseworthy manner, and the Board is deeply appreciative of the excellent work he has done. The thanks of the Council are due to the Council of The Institution of Gas Engineers for allowing Dr. Braunholtz to continue to serve as Secretary of the Gas Research Board, by which fortunate arrangement the closest contact between the two bodies is ensured.

The Director (Dr. King) also made a brief statement regarding the future work of the Board.

UNITED KINGDOM GAS CORPORATION

THE Eighth Ordinary General Meeting of the United Kingdom Gas Corporation, Ltd., was held on June 16 at Shell House, Bishopsgate, E.C. Mr. Bruce Ottley (Chairman of the Corporation) presided.

The Chairman said: I think the accounts now before you call for little comment from me. There was been a further expansion in revenue to £394,659, an increase of £32,564 over 1941. We have been able to write £12,494 off expenses of income in capital, against £7,541 in the previous year, and the carry-forward is slightly increased to £15,423. Such then is the condition of the Corporation's finances in this, the eighth year of its existence.

During this period upwards of £750,000 have been expended on the undertakings acquired apart from expenditure on new undertakings. The effect of the Corporation's policy of improvement, reconstruction, and development is shown by the substantial increase in the gross sales of gas to domestic, industrial, and commercial users, which in the aggregate are now almost double what they were prior to acquisition. Substantial as are the increases, they would, of course, have been far greater were it not for the rigorous policy of economy that has been, in compliance with the wishes of the Ministry of Fuel and Power, strenuously advocated among all our consumers.

The acquisition of undertakings prior to the war was undertaken with a definite plan in each area to provide a cheaper, more efficient, and higher standard of gas service. Twelve of the undertakings have been amalgamated, and no less than 30 have been grouped under unified management pending amalgamation the moment that circumstances permit. These amalgamations and groupings have resulted in substantial savings and improved services to the advantage of the gas consumers.

In Yorkshire operational grouping has been carried to its logical conclusion by the formation of the West Yorkshire Gas Distribution Company, of which we hold all the Ordinary share capital. This is the first statutory company formed for the integration of gas undertakings by collecting and distributing gas—from and to gas undertakings only—manufactured in coke ovens and in the most efficient gas-works. It will be recollected that this new and large development, which conveys gas to undertakings serving an area of over 500 square miles at higher pressure than has hitherto been used in this country, was strenuously opposed by many authorities, and as a result its service was originally confined to undertakings controlled by the Corporation.

A feature of this scheme of integration is that the coke oven companies supplying gas accept by agreement the normal statutory obligations imposed on undertakings as to maintenance, purity, and quality of gas supplied, and the closest co-operation in working is maintained between the management of the coke ovens, the Distribution Company, and the Corporation.

Heavy expenditure was incurred, but confidently incurred by your Board, who had unwavering faith in the great plan submitted to them by Colonel Carr and his staff of highly skilled engineers. A further substantial investment was made in connexion with this scheme whereby the Corporation acquired a 40% interest in the Hemsworth and United Kingdom Coke Oven Company, Ltd., and we are now concerned in its direction and management.

The scheme was brilliantly successful from the moment that it got under way. Indeed, the measure of its success may be gauged from the fact that many of those authorities who actively opposed us in Parliament figure now as staunch supporters, and two are taking, and others are ready to take, if and when in the wisdom of the Ministry they are so permitted, supplies of gas from the grid for their and *a fortiori* their consumers' great benefit. Development on these lines will continue in ever greater measure after the war, when the necessary materials are available, and if we are allowed to complete the comprehensive schemes we have in contemplation in the three main areas in which we operate.

A further unique feature of integration in the control of gas service is exemplified by the Radcliffe, Farnworth, and District Gas Company, where provision is made for the representation on the Board of the Company of the six local authorities which it serves. This arrangement has worked most successfully in the public interest. The practice of representation of local authorities on company boards was continued when the undertaking of the Morley Corporation was purchased. It has demonstrated the advantage to be derived from amalgamating direct public representation with virile private enterprise, and it is proposed to extend this policy as soon as circumstances permit to undertakings where local authorities have not been previously interested.

Much has been talked of post-war planning and the operation of monopolistic services as affecting the life of the population. I have, therefore, endeavoured to give you some information as to the progress made in sound planning co-ordinated for the benefit of the gas consumer, which has resulted from, and was made possible only by, the operation of a Corporation such as this.

I am of the opinion that the integration of the Industry can best be achieved by the utilization of operative holding companies under statutory control working in conjunction with local authorities, and linked up by distribution companies or boards on the lines this Corporation has initiated.

Finally, it may interest you to have a few facts to show what we have been able to do for the benefit of the war effort, and for our consumers. In our central organization our mutual aid repair squads have been able to render valuable first-aid assistance to such of our undertakings as have met with enemy damage—fortunately this number is small—and to other undertakings in the various areas where we are interested.

Our repair and contructional squads have effected great savings by enabling us to utilize and move plant from one works to another to meet abnormal demands. We have rendered, and are rendering, assistance to manufacturers in connexion with gas utilization, both in the provision of appliances and in securing the highest possible efficiency in operation.

The operation of our central administration has enabled economies in labour and materials to be effected such as is not possible to the independent undertaking, and we have continued to render administrative and technical assistance in every phase of operation.

I cannot close my speech without expressing to Colonel Carr and the staffs in London and Manchester, and throughout the whole of our subsidiary undertakings, our appreciation of another year's work carried our under conditions which have continued to be extremely difficult.

The Chairman then moved the adoption of the report and accounts.

Colonel W. Moncrieff Carr, O.B.E., T.D. (Managing Director), said: I second the resolution moved by the Chairman. Following upon his remarks as to the work of the Corporation's administration, I should like to refer to one matter contained in the Directors' report, and that is the alteration in the revenue account to show the total cost of the services rendered to the subsidiaries.

The war has proved the great value of our constructional and repair squads. We have not undertaken work, nor do we intend to carry out tasks that can be conveniently and economically placed to outside contract, but rather to carry out work which we can more satisfactorily handle by reason of its nature, or which involves the use of second-hand material and plant from other works, in addition to urgent and routine repairs. This work has not only resulted in considerable financial savings to our subsidiary companies, but has proved of inestimable advantage in saving materials and labour and in effecting rapid repairs of enemy damage.

The resolution was carried unanimously.

Company News

Drakes, Ltd., Halifax.—A trading profit of £26,021 was reported at the 41st annual meeting at Halifax on June 8. Dividends of 6% on the Cumulative Preference shares and 7½% on the Ordinary shares were declared, leaving a balance of £15,753 to be carried forward. Sympathetic reference was made to the untimely death of Mr. E. H. Payton, who had occupied the chair for only one year, and who had been succeeded by Mr. John A. Drake, great-grandson of the founder of the firm. The report stated that the purchase of the assets of John Morton & Co., Thornton, was completed during the year. The whole of the share capital of John Morton & Co. (Fireclay Thornton), Ltd., is held by Drakes, Ltd.

Meters, Ltd.—Final dividends of 2¾% on Preference stock (making 5½% for the year) and 6% on the Ordinary stock (making 10% for the year), less income-tax (the same as for the previous year), were declared at the 46th annual meeting at Manchester on June 8. Mr. Joseph Morley, Chairman and Managing Director, announced that the net profit was £23,870, and after providing for taxation reserve a balance of £8,539 would be carried forward. The subsidiary company had had a successful year and paid a good dividend. All branches continued to be fully employed, and thanks were due to the management, staff, and workpeople for their loyal co-operation and support in difficult times.

C. & W. Walker, Ltd.—Presiding at the 45th annual meeting on May 28, Mr. R. J. Milbourne said the net profit was £19,302, which, although a little less than for the previous year, was satisfactory. A large percentage of the Company's output was occupied in helping to meet Government needs, but they had been able to carry out a number of important and pressing contracts in connexion with the design, manufacture, and construction of gasholders and other ancillary plant required in the manufacture and distribution of gas and the necessary chemical plant for the extraction of residual products. After the war they looked forward to increasing their important business with the Gas Industry and re-establishing their normal peacetime activities. Since the last meeting the Directors had purchased the freehold of the works site, together with certain buildings included in the lease, and thus strengthened their financial position. Dividends were declared at the rate of 7½% on Preference shares, 10% on Ordinary shares, less income-tax, together with a bonus of 1s. per share on Ordinary shares, leaving £15,276 to be carried forward after provision for N.D.C. and income-tax.

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